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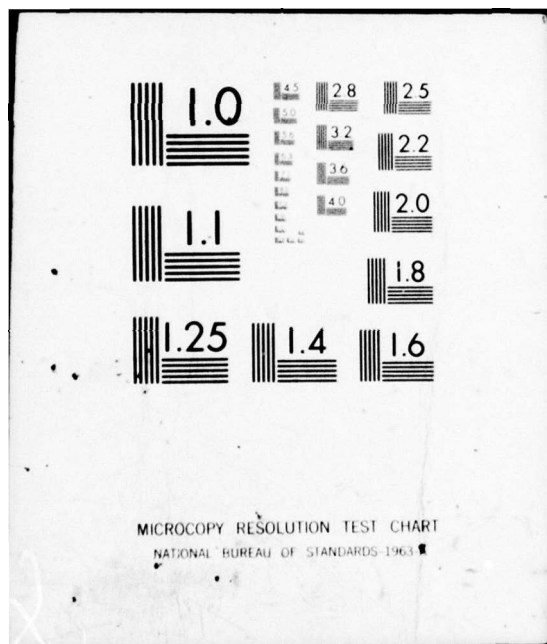
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Monterey, California



THESIS

**VERIFICATION AND FEASIBILITY STUDY
OF A MICRO-COMPUTER BASED
BALLISTICS ALGORITHM**

by

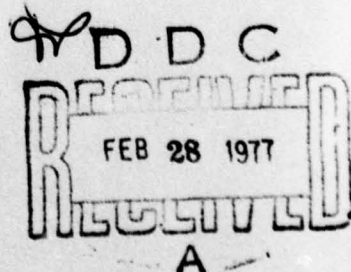
John Thomas Ertlschweiger II

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Verification and Feasibility Study
of a Micro-Computer Based
Ballistics Algorithm

by

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Lieutenant, United States Navy
B.A., University of Virginia, 1969

Submitted in partial fulfillment of the
requirements for the degree of

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ABSTRACT

The radical cost reductions in computer hardware brought about by large scale integration (LSI) has motivated this feasibility study which explores the use of the INTEL 8080 as a ballistics computer in a distributed micro-computer based airborne tactical weapons system.

The results show that software floating point arithmetic using a sixteen bit mantissa is sufficiently accurate for solving the ballistics problem.

Experimental data failed to show that the mathematical model accurately predicts the weapon's behavior. Either the instrumentation to record the release data was inaccurate, or the ballistics tables do not accurately predict the actual behavior of falling weapons.

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I. INTRODUCTION

Military airborne tactical weapon systems have been designed and implemented primarily to aid the aircrew in performing their mission with accuracy and speed. This usually means that a shorter time is spent over target which increases the survivability of both the weapon systems platform and the aircrew.

The system presently employed on board the A6E, one of the Navy's attack aircraft, utilizes an IBM 4 PI series mini-computer to perform two major functions.

1. Navigation.
2. Solution of the ballistics problem.

In addition, several other related functions are performed by the system.

3. It provides steering commands.
4. It provides real-time display of sensor information.
5. It provides release pulses to the weapon at the appropriate time.

A. FEASIBILITY STUDY

This thesis will attempt to prove the feasibility of implementing an airborne tactical weapons system using

micro-computers. Two important questions must be answered in order to establish the feasibility of using a micro-computer in a tactical weapons system:

1. Is the micro-computer accurate enough?
2. Is the micro-computer fast enough?

The accuracy problem was approached by executing the ballistics algorithm on an IBM system 360 using a 21 to 24 bit mantissa in the standard floating point format and comparing the results of the same algorithm executed on an INTEL 8080 micro-processor with a 16 bit floating point mantissa. The question of speed was answered by executing the ballistics algorithm for numerous weapon types and initial conditions and observing the elapsed clock time.

B. VERIFICATION

The second aspect of this thesis was to verify that the ballistics algorithm corresponded to published tables as well as experimental data. The NAVAIR 01-1C-1T-1 ballistics tables were used to compare time of fall and down range travel against the results of the FORTRAN version of the ballistics algorithm. A total of 1813 different initial release conditions were examined spanning 18 different weapon types, various dive angles from +10 degrees to -60 degrees, altitudes from 500 feet to 15,000 feet, and air-speeds from 300 knots to 650 knots.

The source of experimental data was a set of data cards recorded by the bombardiers of an A-6E squadron over a period of one year. The data for each bomb drop consists of 24 various computer readouts at the instant the weapon is released from the aircraft as well as the hit coordinates of the weapon. This information is used to determine the initial conditions for the ballistics equations. Unfortunately a critical parameter, the dive angle, was recorded only to the nearest degree. Consequently an error analysis was conducted to determine the maximum error which could be expected from the rounding of the output data.

C. PRESENTATION OF THE THESIS

Chapter II explains the organization of a distributed micro-computer airborne tactical weapons system and discusses how the output of each subsystem is integrated with the entire system. The ballistics problem and the derivation of the differential equations used to describe the mathematical model are discussed in detail in Chapter III. Since no analytical solution exists for these equations, a simplified version of the model is solved analytically to gain insight.

Chapter IV explores the feasibility of using micro-processors in an airborne tactical weapons system.

Aspects of accuracy and speed are examined. Factors in attempting verification of the ballistics algorithm and experimental data with the NAVAIR 01-1C-1T-1 ballistics tables are contained in Chapter V.

Chapter VI presents the results of this thesis. The conclusions and recommendations of the author concerning this thesis are written in Chapter VII.

Appendix A contains the output from the FORTRAN program comparing the FORTRAN and PLM versions of the ballistics algorithm. Appendix B presents the same comparison between the FORTRAN version of the ballistics algorithm and the ballistics tables. Appendix C is a listing of the experimental data as they were recorded from the cockpit readouts of various A-6E aircraft. Appendices D and E are the results of the experimental delivery data compared against the FORTRAN version of the ballistics algorithm (approximating the ballistics tables), using two sets of drag coefficients.

The ballistics algorithm used in this thesis is the SIGMA version of the BOEING ALGORITHM modified by the Naval Weapons Laboratory at China Lake, California. The algorithm was further modified at the Naval Postgraduate School in Monterey, California for eventual implementation on the ballistics processor of the multiple micro-processor tactical weapons system.

II. BACKGROUND

To provide a better understanding of the role the ballistics processor plays in the multiple processor system, a brief overview of the proposed system will be discussed. The computer system is composed of three micro-processors: a navigation computer, a ballistics computer, and an executive computer. Each machine is dedicated to the process to which it is assigned instead of sharing resources of a single processor as in the present operational systems.

A. THE NAVIGATION COMPUTER

The navigation computer is a basic element to all tactical systems. In present operational systems, the navigation program is executed periodically to update the present position by the change in position since the last time increment. The navigation computer utilizes input from four major sensor instruments as its primary source of information.

1. The Inertial Navigation System.
2. The Doppler Radar.
3. The Air Data Computer.
4. The Search Radar.

The inertial navigation system provides heading (azimuth), attitude (roll and elevation), and velocity increments in the X, Y, and Z directions. The doppler radar is a velocity sensor that utilizes the doppler shift principle to measure ground track speed and drift angle. The ground speed and drift angle derived from the doppler radar along with the true heading from the inertial navigation system are used to calculate the direction and magnitude of the wind. The air data computer uses the ambient static pressure and ram air pressure from the pitot tube to calculate corrected static pressure, pressure altitude, and mach number. Outputs from the air data computer are used to damp the raw velocities from the inertial system. The search radar provides target azimuth, range, and elevation signals to the navigation computer. The search radar elevation along with the aircraft elevation from the inertial system are used to measure the radar depression angle (look down angle to target from flight path vector). The depression angle and search radar slant range are used to compute ground distance to the target independent of altitude.

As the navigation computer calculates new incremental distances for each time increment, the present position is continuously updated. After each update, the executive computer is interrupted and the current value is passed to

it. If the navigation computer is functional, the aircrew will have current present position information independent of the status of the executive computer.

B. THE BALLISTICS COMPUTER

The ballistics computer is provided with the most current estimates of position and velocity of the aircraft. It is also provided with the weapon type selected by the aircrew. The ballistics algorithm computes the down range travel and time of fall for the weapon based on the airspeed, dive angle and altitude of the aircraft. The ballistics algorithm will be discussed in depth in Chapter III.

C. THE EXECUTIVE COMPUTER

The executive computer displays the information generated by both the ballistics and navigation computers. The executive computer is also responsible for issuing steering commands to the autopilot and firing pulses to the weapons release mechanism. The most important task the executive computer performs is to extrapolate a predicted weapon release point based on a time history of the position and velocity of the aircraft. Thus, even though the other two computers can operate independently, the aircrew cannot make a computer delivery without the executive computer.

D. THE COMMUNICATIONS SCHEME

Because of the inherent hierarchy between the computers involved, the master-slave type of multiprocessing is the most suitable and simple form to implement. The navigation and the ballistics computers act as peripheral devices of the executive computer, resulting in a one way interrupting scheme. The only computer which has to be interrupted is the executive computer. The navigation and ballistics computers are the dedicated slaves which asynchronously interrupt the executive computer.

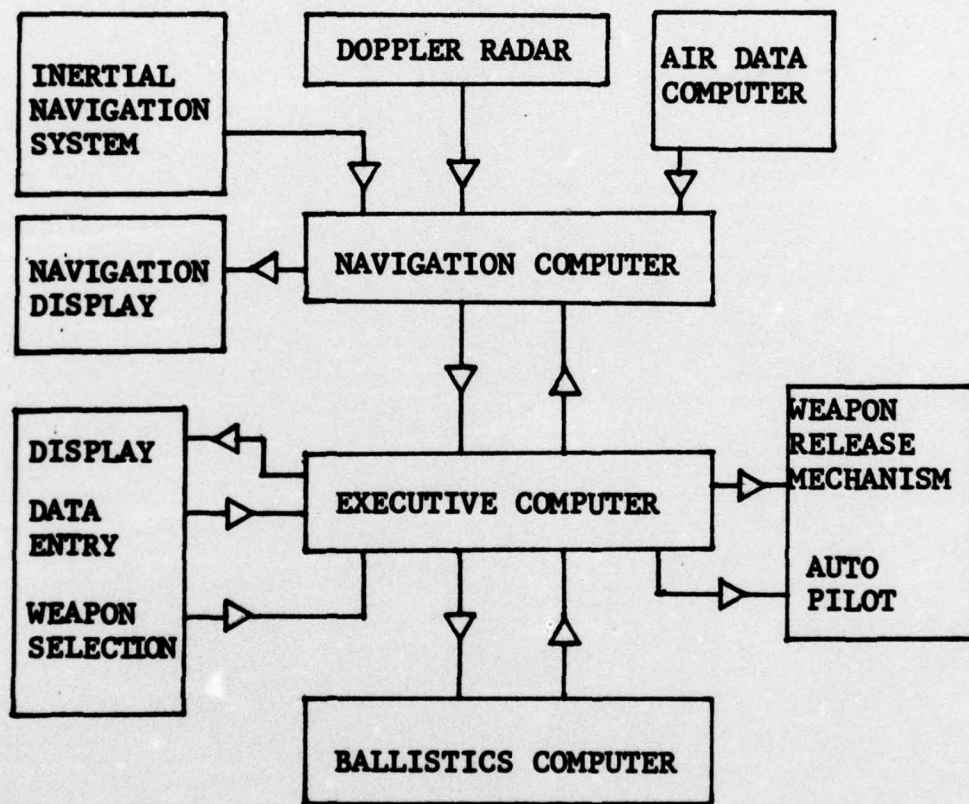


FIGURE 1. ORGANIZATION OF MULTIPLE PROCESSOR AIRBORNE TACTICAL WEAPONS SYSTEM

III. BALLISTICS PROBLEM

Since the earliest days of aerial warfare, the heart of the ballistics problem has been to drop a bomb from an airborne weapon platform and to consistently hit a target. The problem still exists today; however, with the aid of a computer the problem can be quickly and accurately solved. This necessitates the development of a mathematical model which approximates the actual path a weapon travels through space. Statistically, projectiles have been shown to follow predictable paths which behave very much like freely falling bodies described by Isaac Newton.

A. THE MATHEMATICAL MODEL

The ballistics problem can be described as a body falling through space according to Newton's second law of motion. The mathematical model or equation governing the trajectory of a ballistics projectile is a second order differential equation:

$$ma = mg - c |v|v \quad (1)$$

where: m = mass of the body
 a = acceleration vector
 g = acceleration due to gravity

c = drag coefficient

v = velocity vector

The term $c(|v|v)$ is the drag due to the air resistance of the body and is proportional to the square of the velocity.

At the time the projectile is released from the aircraft it will have an initial position and velocity. The differential equation together with the initial conditions uniquely determines the trajectory of the projectile.

This particular mathematical model was chosen for two reasons:

1. It approximates reality accurately.
2. The Navy publishes range and time of fall information in tables (NAVAIR 01-1C-1T-1) which uses this model.

The latter is the primary reason for using the ballistics tables as a standard or guideline in the verification of any new mathematical models or program implementations.

B. BASIC ASSUMPTIONS

Unfortunately there is no known analytical solution for this set of differential equations. However, a simpler problem does have an analytical solution. Thus, for the sake of simplicity and to aid in the discussion of this solution, let us first assume:

1. Level, non-accelerated flight.
2. Bombs are not ejected from the bomb rack.
3. No forward firing ordnance.
4. Drag/wind resistance is negligible.
5. Time of release is time = 0.

In addition, this discussion also assumed:

6. The Earth is flat and non-rotating.
7. The gravitational attraction, g , is constant.

C. DERIVATION OF DOWN RANGE TRAVEL

Rewriting equation (1) with respect to the time derivatives of the position vector, say u , the equation becomes:

$$m\ddot{u} = mg - c |\dot{u}| \dot{u} \quad (2)$$

By letting $u = (x, y)$, equation (2) is transformed into a system of two equations describing motion in a two dimensional coordinate system.

$$m\ddot{x} = \left[-c \sqrt{\dot{x}^2 + \dot{y}^2} \right] \dot{x} \quad (3)$$

$$m\ddot{y} = -mg - \left[c \sqrt{\dot{x}^2 + \dot{y}^2} \right] \dot{y} \quad (4)$$

Initial conditions for the system are derived from the release position and velocity vectors of the aircraft:

Position

$$x(t_0) = r_x(t_0)$$

$$y(t_0) = r_y(t_0)$$

Velocity

$$\dot{x}(t_0) = \dot{r}_x(t_0)$$

$$\dot{y}(t_0) = \dot{r}_y(t_0)$$

As a result of the assumption that air resistance is negligible and the aircraft's velocity and position determine the initial conditions, equations (3) and (4) are simplified to

initial conditions

$$m\ddot{x} = 0$$

$$\dot{x}(0) = \dot{r}_x(0)$$

$$x(0) = r_x(0)$$

$$m\ddot{y} = -mg$$

$$\dot{y}(0) = \dot{r}_y(0)$$

$$y(0) = r_y(0)$$

The solution of these two equations is obtained by dividing by the constant m , integrating twice with respect to time, and solving for the constants of integration.

$$\int \ddot{x}(t) dt = \int 0 dt \Rightarrow \dot{x}(t) = c_1$$

$$\int \dot{x}(t) dt = \int c_1 dt \Rightarrow x(t) = c_1 t + c_2$$

when $t = 0$:

$$c_1 = \dot{x}(0) = \dot{r}_x(0)$$

$$c_2 = x(0) = r_x(0)$$

therefore,

$$x(t) = \dot{r}_x(0)t + r_x(0) \tag{5}$$

where:

$x(t)$ = total down range travel after release.

$r_x(0)$ = initial displacement $x(0)$ of weapon
at the time of release, usually 0.

$\dot{r}_x(0)t$ = down range travel due to initial velocity.

$$\int \ddot{y}(t) dt = \int -g dt \quad \Rightarrow \quad \dot{y}(t) = -gt + c_1$$

$$\int \dot{y}(t) dt = \int -gt + c_1 dt \quad \Rightarrow \quad y(t) = -\frac{1}{2}gt^2 + c_1t + c_2$$

$$\text{when } t = 0: \quad c_1 = \dot{y}(0) = \dot{r}_y(0)$$

$$c_2 = y(0) = r_y(0)$$

therefore,

$$y(t) = -\frac{1}{2}gt^2 + \dot{r}_y(0)t + r_y(0) \quad (6)$$

where:

$y(t)$ = the height above the ground at any time t .

$r_y(0)$ = initial altitude $y(0)$ of weapon at time of release.

$\dot{r}_y(0)t$ = altitude loss/gain due to aircraft's initial
vertical velocity.

$-\frac{1}{2}gt^2$ = altitude lost due to gravity.

If the time from weapon release to weapon impact, or time of fall, is known, the ballistics problem is reduced to determining the down range travel, $x(t^*)$, given its initial-velocity, $\dot{r}_x(0)$ and the time of fall, t^* . Time of

fall can be found by setting equation (6) to 0 and solving for the positive root of t .

$$-\frac{1}{2}gt^2 + \dot{r}_y(0)t + r_y(0) = 0$$

Using the quadratic formula:

$$t^* = \left[-b \pm \sqrt{b^2 - 4ac} \right] / 2a$$

where:

$$a = -g/2$$

$$b = \dot{r}_y(0)$$

$$c = r_y(0)$$

$$t^* = \frac{\dot{r}_y(0) + \sqrt{(\dot{r}_y(0))^2 + 2gr_y(0)}}{g}$$

By substituting time of fall, t^* , into equation (5)

$$x(t^*) = \dot{r}_x(0)t^* + r_x(0)$$

down range travel, DRT, can be calculated.

$$DRT = x(t^*) = \dot{r}_x(0) \frac{\dot{r}_y(0) + \sqrt{(\dot{r}_y(0))^2 + 2gr_y(0)}}{g} + r_x(0)$$

Since the coordinate system is arbitrarily placed, assume initial displacement, $r_x(0)$, to be zero at the time of release. Also, since level non-accelerated delivery is

assumed, initial vertical velocity, $\dot{r}_y(0)$, is zero. The expression for down range travel now becomes:

$$DRT = \dot{r}_x(0) \sqrt{\frac{2r_y(0)}{g}}$$

In reality the problem must take into account the constraints placed on the problem earlier. Wind, drag, vertical velocity, and non-level delivery parameters make the solution more difficult. Solution in this case is accomplished numerically using a second order Runge-Kutta scheme on a digital computer.

IV. MICRO-COMPUTERS IN AIRBORNE TACTICAL WEAPON SYSTEMS

The question of whether or not micro-computers are feasible in an airborne tactical weapon systems environment was approached by first translating the ballistics algorithm into two high level languages, FORTRAN and PLM. (See Ref. 3). The FORTRAN version was executed on the IBM system 360 and the PLM version was executed on the INTEL 8080 micro-processor. Thus, if the same algorithm is executed on two different machines, the INTEL 8080, whose floating point mantissa has 16 bits and the IBM 360, whose floating point mantissa has 21-24 bits, then the differences in results can only be attributed to the difference in the precision of the two machines.

A. THE QUESTION OF ACCURACY

The solution of the ballistics problem requires solving a set of four differential equations numerically on a digital machine. This necessitates numerous arithmetic operations, including multiplication and division.

Since micro-computers presently lack hardware multiply and divide functions, a software package capable of performing floating point arithmetic operations must be used. However, this requires a significant amount of additional

computing time in the solution of the ballistics problem. As a result an alternate design in computer architecture was explored which utilizes three INTEL 8080 micro-processors instead of one, as in the mini-computer systems. In this multiple micro-processor system, each processor is dedicated to each of the primary functions of the system: executive, navigation, and ballistics computations.

The floating point mathematical package used in conjunction with the ballistics micro-processor uses a three byte binary representation with a 16 bit mantissa and an 8 bit exponent. The mantissa is left justified so that the most significant bit is always on and need not be stored, giving a full 16 bits of precision. The exponent is expressed as a power of 2 where the most significant bit serves as the sign bit. This three byte number is used instead of a conventional four byte scheme in order to reduce the time needed to perform the calculations necessary to solve the ballistics problem.

IBM's system 360 computer utilizes a four byte floating point hexadecimal number with a 21 to 24 bit mantissa and an 8 bit exponent. Since this method requires the first byte to have the value 1 to F (hexadecimal), the precision of the mantissa can vary between 21 bits (when the leading three bits are zero) and 24 bits. The exponent is expressed

as a power of 16 and also contains the sign bit. An obvious advantage the IBM 360 has is that it does floating point arithmetic in hardware which makes it approximately two orders of magnitude faster than the software version.

The INTEL 8080 micro-computer uses 8 bit operations and has the option of using double precision (16 bit) operations. The double precision operation permits multiplications and division to be performed as sequences of 16 bit additions and subtractions. Then, if the mantissa is kept left justified (16 bit precision), the double precision feature can be used to maintain 16 bits of precision throughout the calculation. If more precision is desired, such as 21 or 24 bits of precision, a quantum jump in execution time can be expected because of the additional computer cycles required.

It is the intention of this thesis to show that the loss of one byte of precision will not significantly affect the results of the ballistics solution. The accuracy with which a weapon is delivered depends greatly upon the accuracy and precision of the sensor supplied information. The loss of one byte of precision only affects the sixth most significant digit which is an order of magnitude more precise than most of the input sensors on board attack aircraft. This then is the motivation to compare the

results of a FORTRAN ballistics algorithm executed on the IBM system 360 with the same algorithm translated into PLM and executed on the INTEL 8080 micro-computer.

B. THE QUESTION OF SPEED

The second area of interest is the question of speed. At the time this thesis was written, an LSI (large scale integration) "chip" existed which could perform the floating point multiply and divide operations at the cost of \$270. However, due to budgetary constraints this equipment was not readily available for experimentation. The hardware floating point "chip" can execute approximately 100 times faster than the software floating point package. For example, a multiply operation in the software package takes approximately 600 microseconds to execute whereas the hardware package executes a multiplication in 6 microseconds. A hardware multiply and divide operator was also developed and constructed as a micro-computer course project at the Naval Postgraduate School and was demonstrated to function at 60 microseconds.

By interrupting the program during execution and recording the location of the program address register, it was determined that the ballistics program spends about 92% of its execution time in the floating point package. According

to Jupin (Ref. 3) the execution time of each solution was proportional to the calculated time of fall. These results were confirmed by executing nearly 1800 separate calculations. The time to calculate the predicted release point proved to be about 10% of the calculated time of fall. Linhares (Ref. 2) was able to show that the ballistics algorithm was fast enough for certain initial conditions, however for high airspeeds and low altitude release conditions his extrapolation technique was not usable.

A substantial amount of the time the program spends in the floating point package (about 92%) is spent in the multiply and divide procedures. Using either the commercially produced "chip" or the locally constructed hardware multiply and divide operator, a significant reduction in execution time would result. Although this thesis will not answer the question of speed with an unqualified yes, it supports the finding that the ballistics processor is fast enough.

TRIAL	TOTAL NUMBER OF INTERRUPTS ATTEMPTED	NUMBER OF INTERRUPTS PROGRAM WAS IN FLOATING POINT PACKAGE	PER CENT OF TIME PROGRAM SPENT IN FLOATING POINT PACKAGE
1	323	289	89.5
2	343	319	92.0
3	367	346	94.3
TOTAL	1033	954	92.4

TABLE 1. AMOUNT OF TIME BALLISTICS PROGRAM SPENDS IN THE FLOATING POINT PACKAGE

V. VERIFICATION OF DOWN RANGE TRAVEL

Two separate verifications of down range travel were made, using the ballistics tables as a "standard." First, the FORTRAN and PLM versions of the mathematical model, previously discussed, were tested against the ballistics tables. Second, observed data was compared against the FORTRAN version for accuracy in time of fall and down range travel. The FORTRAN version was executed on the IBM 360 (32 bit machine), while the PLM version was executed on the INTEL 8080 micro-computer utilizing a 24 bit floating point mathematical package on an 8 bit machine.

A. THE BALLISTICS ALGORITHM - FORTRAN VS. PLM

A straight forward comparison between the FORTRAN version and the PLM version of the ballistics algorithm was made contrasting the down range travel and time of fall. An input/output interface was written to the PLM program so that data could be read from a floppy disk and the results written onto the same device. The floating point package was also modified in order to execute on the INTEL 8080 and a logic error in the multiply procedure was corrected. The FORTRAN program (Ref. 3) was virtually unchanged. however a statement was added to the TRAJ subroutine to

patch a logic error affecting the second stage trajectory calculation.

B. OBSERVED DATA VS. BALLISTICS TABLES

Since the ballistics tables are considered a "standard" against which various types of ballistics results are compared for validity, a comparison between observed results, obtained from the A6-E experimental data, and the ballistics tables (NAVAIR 01-1C-1T-1) was desired to establish a correlation between the two. However, several problems were encountered in making the comparison.

1. Predicted Down Range Travel

The initial conditions of the observed data are not compatible with those of the ballistics tables. The observed data has initial conditions composed of various dive angles, altitudes, and airspeeds, whereas the ballistics tables' initial conditions are multiples of 50 and 100 for altitude and airspeed, and zero for dive angle (only considering level delivery). Two apparent solutions to this difficulty are (1) the error sensitivity tables and (2) interpolation of the ballistics tables. However, both have disadvantages.

The error sensitivity tables failed to help because the corrections are based on maintaining a constant sight

line (mil setting) rather than keeping down range travel constant. For example, in a level delivery situation the error sensitivities table assumes a constant sight line and varies the down range travel by affecting corrections to the altitude. Therefore, if the altitude is higher than planned and the sight line is maintained, the hit will be short. However, the problem using observed data requires a constant down range travel to target, applying correction for altitude and airspeed. Therefore, the error sensitivity tables could not effectively be used in this case.

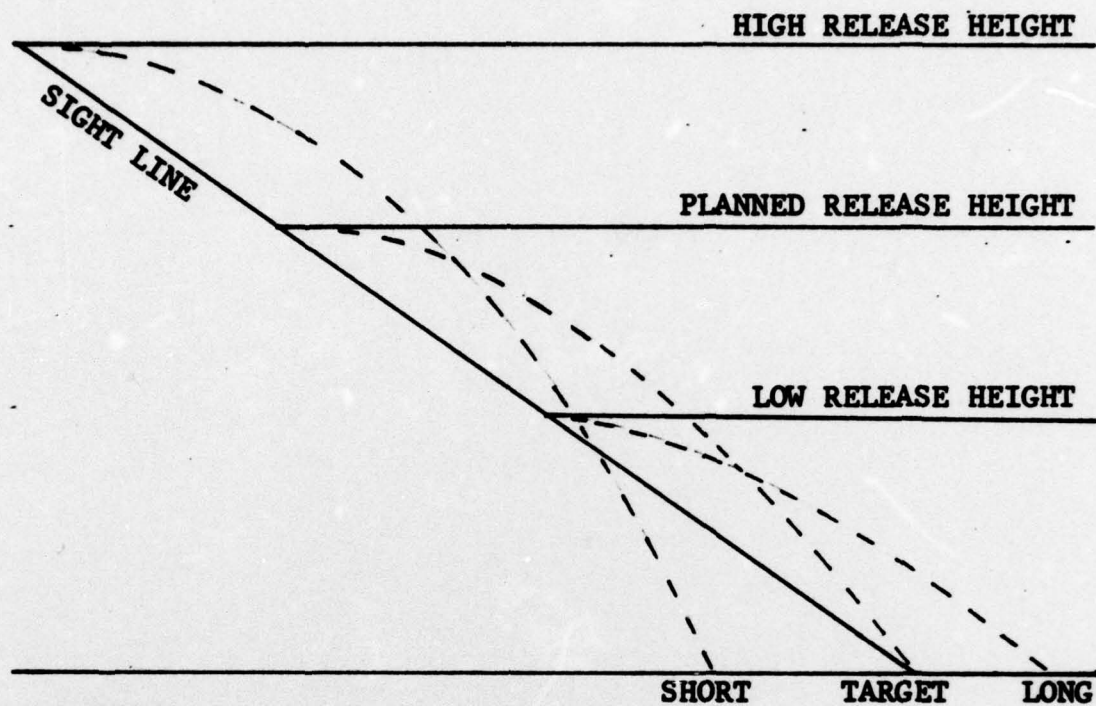


FIGURE 2.
EFFECTS OF BALLISTICS TABLES ERROR SENSITIVITIES FOR HEIGHT

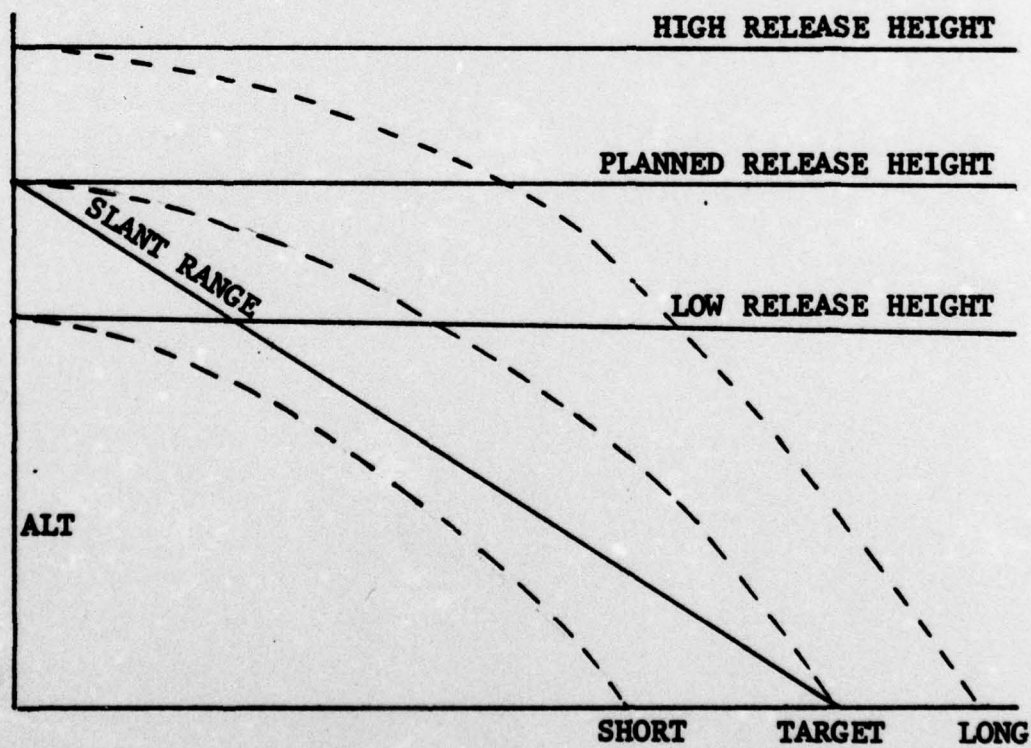


FIGURE 3. DESIRED ERROR SENSITIVITIES FOR BALLISTICS PROBLEM

The ballistics tables are not linear. Second and even third order interpolation would be required to determine down range travel on anything other than a cardinal altitude or airspeed. This process is extremely tedious and time consuming and was abandoned as impractical.

As a result, an accurate substitute for the ballistics table value for down range travel was sought. Using the ballistics tables for the MK-76 mod-5 practice bomb, 96 data points were selected from all dive angles, airspeeds, altitudes, and tested against the FORTRAN ballistics program. Time of fall and down range travel compared favorably with a mean error of 0.23% for down range travel and 0.11% for time of fall. This was considered accurate enough to be used as an approximation for the ballistics tables' value for down range travel.

2. Wind Effect

The wind plays an important and rather subtle role in determining the total down range travel. First, assuming a no wind condition, the down range travel, DRT, is computed in the direction of the true heading. Since no wind is present to deflect the projectile, the true heading and ground track will coincide and the down range travel along the true heading and ground track will be equal.

Now consider the wind. If a coordinate system (x,y,z) is introduced such that the air does not move with respect to the coordinate system, then an aircraft in this air mass has velocity with respect to the air mass and its heading will be the true heading. Because the air mass moves with respect to the ground with the wind velocity, $w = (w_x, w_y, w_z)$, the Earth fixed coordinate system (x',y',z') is related to (x,y,z) by the following equations:

$$x' = x + w_x t$$

$$y' = y + w_y t$$

$$z' = z + w_z t$$

Considering only the horizontal wind, the vertical wind, w_z , becomes zero. Down range travel can now be determined given an initial altitude, z , and air velocity, V , and will be in the direction of the true heading. To determine the point (x',y') in the Earth fixed coordinate system at which the weapon lands requires:

$$x' = x(\text{tof}) + w_x * (\text{tof})$$

$$y' = y(\text{tof}) + w_y * (\text{tof})$$

For example, given the same initial conditions, down range travel will be computed, as before, in the direction of the true heading. However the aircraft will drift with the

wind and will actually move across the ground on a different heading, called ground track. Since DRT is computed along true heading, the projection of DRT onto the ground track is that distance the projectile will travel due to the initial conditions alone.

$$\text{PROJECTED DRT} = \cos(\text{TH-GT}) * \text{DRT}$$

The down range component (along the ground track) of DRT due to wind is computed as follows:

$$\text{X-COMP} = -\cos(\text{WDIR-TH}) * \text{WKTS} * \text{TOF} * 1.6867$$

where:

X-COMP = down range component of DRT due to wind

WDIR = true wind direction

TH = true heading

WKTS = wind speed in knots

TOF = time of fall in seconds

1.6867 = conversion from knots to ft/sec

This distance added to the PROJECTED DRT gives the WIND CORRECTED DRT which is the total DRT the projectile will travel in a moving air mass.

$$\text{WIND CORRECTED DRT} = \text{X-COMP} + \text{PROJECTED DRT}$$

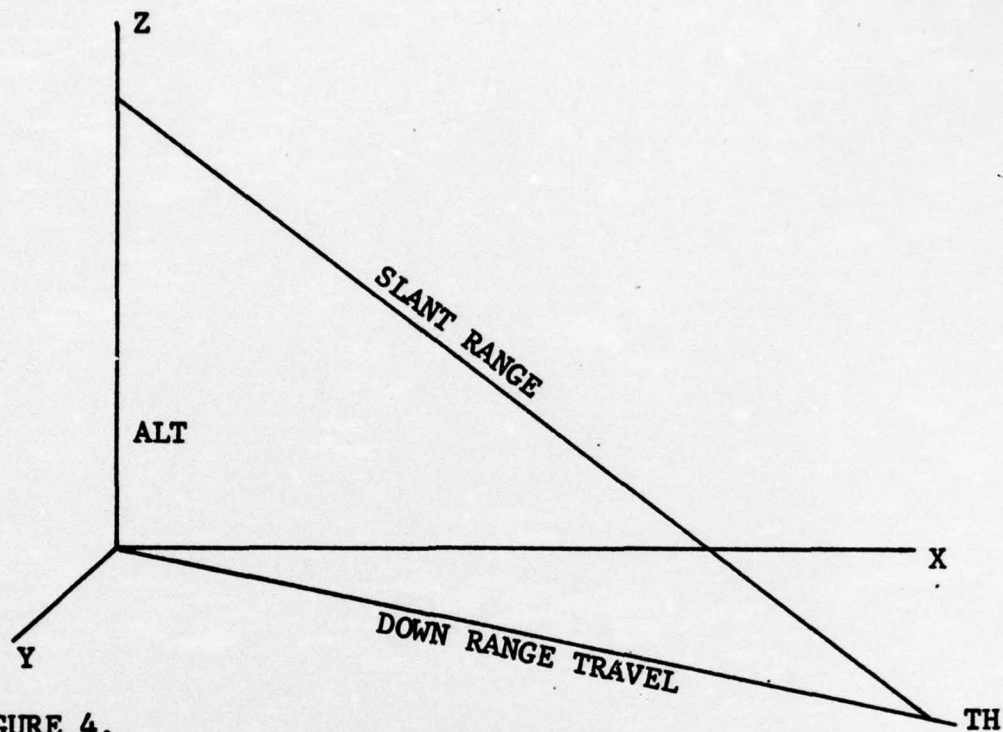


FIGURE 4.
NO WIND SOLUTION TO DOWN RANGE TRAVEL

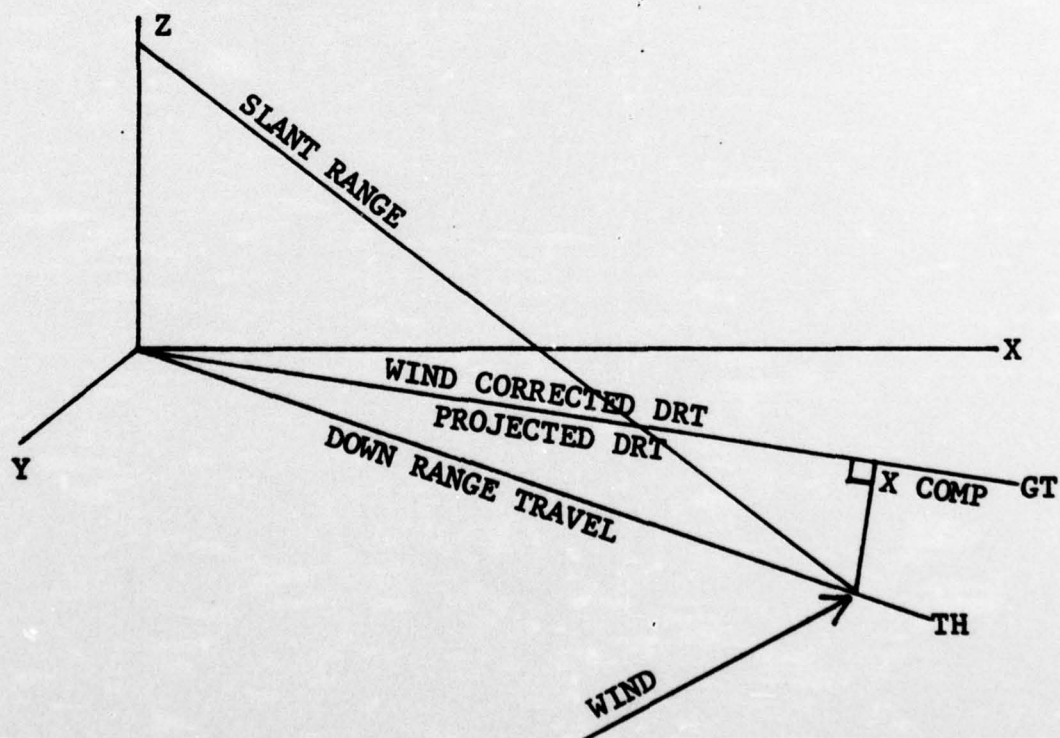


FIGURE 5. WIND CORRECTED SOLUTION TO DOWN RANGE TRAVEL

3. Observed Slant Range

The experimental data taken from the A-6E aircraft during actual drop conditions provides many useful delivery parameters, sensor readings, and intermediate calculations. However, the one piece of information needed to make the desired comparison, down range travel, was missing. But various other parameters were available, and DRT could be reconstructed by several different methods. The problem was to determine which method is the most accurate.

a. Method for DRT Calculation

Slant range to the target and search radar depression angle (look down angle from flight path vector) is made available by the search radar. Down range travel simply becomes

$$DRT = \cos(DEPANG) * SR$$

where:

DEPANG = search radar depression angle

SR = search radar slant range to target

A second method takes advantage of the aircraft's present position altitude and target altitude to compute vertical separation and down range travel.

$$VERT\ SEP = PPA - TGT\ ALT$$

$$DRT = \cos \arcsin(VERT\ SEP / SR) * SR$$

where:

VERT SEP = vertical separation

PPA = inertial derived present position altitude

TGT ALT = target altitude

A third and final method of computing down range travel uses the vertical separation generated by the ballistics program on board the A-6E aircraft.

$$DRT = \cos \arcsin(\text{VERT SEP} / \text{SR}) * \text{SR}$$

b. Error Analysis

An error analysis was conducted to determine which method would produce the most accurate value for DRT. This would yield a maximum error bound which can be expected in DRT due to this method of calculation. The third relationship proved to have the smallest error bound and was eventually used to reconstruct the down range travel from the experimental data.

For example, the maximum error bound on the relationship

$$DRT = \cos \arcsin(\text{VERT SEP} / \text{SR}) * \text{SR}$$

is the sum of the partial derivatives of DRT multiplied by their tolerances.

$$|\Delta_{DRT}| = \left| \frac{\partial DRT}{\partial \text{VERT SEP}} \right| |\Delta_{\text{VERT SEP}}| + \left| \frac{\partial DRT}{\partial SR} \right| |\Delta_{SR}|$$

The third method of computing down range travel will serve as an example for this procedure.

$$DRT = \cos \arcsin (\text{VERT SEP} / SR) * SR$$

The partial derivative of DRT with respect to VERT SEP becomes:

$$\frac{\partial DRT}{\partial \text{VERT SEP}} = \frac{SR}{\sqrt{(SR)^2 - (ALT)^2}}$$

The partial derivative of DRT with respect to ALT becomes:

$$\frac{\partial DRT}{\partial ALT} = \frac{-ALT}{\sqrt{(SR)^2 - (ALT)^2}}$$

the error bounds are:

$$\text{VERT SEP} = \pm 0.5 \text{ feet (rounded to the nearest foot)}$$

$$SR = \pm 5.0 \text{ feet (rounded to the nearest 10 feet)}$$

Therefore, the maximum error bound that can be expected from rounding error of actual delivery data becomes:

$$\Delta_{DRT} = \frac{0.5(SR) + 5.0(ALT)}{\sqrt{(SR)^2 - (ALT)^2}}$$

This analysis was performed using all three methods of constructing down range travel. The third method was found to be the most accurate with a maximum

error bound of 5.2 feet and was the method used to construct the down range travel from the freeze data.

4. Hit Distances

The hit coordinates of the experimental data were not utilized because the computer bases its calculations on the location of the search radar cursors. If the cursors are not properly placed, the weapon, most likely, will not hit the target. However, for the slant range measured by the search radar set, the down range travel and time of fall will be calculated accurately and the weapon will hit the ground in the proximity of the cursor placement.

VI. PRESENTATION OF RESULTS

A. FORTRAN VS. PLM

Appendix A contains the results of comparing identical ballistics algorithms: a FORTRAN program which is a Naval Postgraduate School modification of the Naval Weapons Center BOEING algorithm, and a PLM version of the same algorithm (Ref. 3). The difference between the procedures is that the FORTRAN program uses the standard IBM 21 to 24 bit mantissa for its floating point number, whereas the PLM version uses a 16 bit mantissa.

A summary of the results is presented in Table 2. With the exception of weapon number five (MK-76 MOD-5) the largest average difference in down range travel (DRT) was 1.6 feet and the maximum absolute difference in DRT was 17 feet, which occurs when DRT is 8,332 feet. Weapon number five is suspected to have a coefficient error, although none have been discovered.

Overall these results indicate that the sixteen bit mantissa is sufficiently accurate to perform the ballistics algorithm.

WEAPON ID NUMBER	AVERAGE PER CENT IN DRT (feet)	AVERAGE PER CENT IN TOF (seconds)	MAXIMUM PER CENT IN DRT (feet)	MAXIMUM PER CENT IN TOF (seconds)
4	0.0191	0.1733	0.18	0.68
5	0.1150	0.5622	0.72	2.24
6	0.0070	0.0745	0.03	0.31
7	0.0200	0.0200	0.17	0.60
8	0.0152	0.1318	0.13	0.66
9	0.0160	0.0886	0.03	0.58
10	0.0141	0.0830	0.13	0.56
11	0.0158	0.1066	0.12	0.55
12	0.0128	0.0744	0.16	0.41
13	0.0077	0.0498	0.05	0.28
14	0.1661	0.0938	0.16	0.59
15	0.0102	0.0728	0.06	0.37
16	0.0151	0.0899	0.20	0.62
17	0.0062	0.0269	0.02	0.13
18	0.0103	0.0056	0.03	0.02
20	0.0072	0.0167	0.02	0.04
21	0.0147	0.0105	0.04	0.02
22	0.0107	0.0080	0.03	0.02

TABLE 2. SUMMARY OF FORTRAN VS. PLM RESULTS

B. BALLISTICS TABLES VS. FORTRAN RESULTS

The ballistics tables were compared against the results of the FORTRAN version of the ballistics algorithm. Appendix B contains the results for a variety of initial conditions and weapon types. The results indicate substantial discrepancies between the ballistics tables and the FORTRAN program. The latest version of the Naval Weapons Center's ballistics algorithm (including revised drag coefficients) still does not resolve these differences. Table 3 gives a summary of the data in Appendix B. Weapon number five (MK-76 MOD-5), which was used in the experimental data shows reasonable accuracy for the range of parameter values used in the experiment.

WEAPON ID NUMBER	AVERAGE PER CENT IN DRT (feet)	AVERAGE PER CENT IN TOP (seconds)	MAXIMUM PER CENT IN DRT (feet)	MAXIMUM PER CENT IN TOP (seconds)
4	0.1751	0.1758	0.67	0.49
5	0.2260	0.1135	0.93	0.51
6 *	19.734	20.092	41.14	38.30
7	0.5498	0.8586	2.02	1.78
8 *	0.0986	0.1117	0.42	0.34
9	0.1396	0.1743	0.72	1.02
10	0.4749	0.7935	2.03	2.89
11	0.0777	0.1118	0.50	0.44
12	0.1102	0.3033	0.48	0.86
13	0.0526	0.0892	0.13	0.76
14	0.1050	0.1937	0.32	0.67
15	0.1075	0.0456	0.26	0.18
16	0.3688	0.2456	1.58	1.15
17 *	0.0521	0.0977	0.20	0.62
18	3.3773	1.6483	27.34	9.20
20	1.1159	1.5200	7.46	10.32
21	2.8479	4.9681	8.62	23.81
22	3.5271	1.5409	28.23	8.40

* used invalid drag and mach coefficients

TABLE 3. SUMMARY OF BALLISTICS TABLES VS. FORTRAN RESULTS

C. EXPERIMENTAL DATA VS. FORTRAN ALGORITHM

Experimental data gathered by bombardiers from Naval Air Station Whidbey Island at Boardman bombing range is given in Appendix C. Because the ballistics table and the FORTRAN algorithm agree reasonably well, the FORTRAN algorithm was used in place of the ballistics tables for convenience. The down range travel and time of fall were calculated from:

1. The experimental data.
2. The FORTRAN algorithm with the old drag coefficients.
3. The FORTRAN algorithm with the new drag coefficients.

The calculations are described in section (5.B.2, Wind Effect), and the results are summarized in Table 4.

The substantial discrepancy between the experimental data and the results of the ballistics algorithm cannot be dismissed. Because the ballistics algorithm's down range travel agrees with the official Navy ballistics tables to within 0.2%, the 12% discrepancy in DRT leads to the conclusion that either the instrumentation on many different aircraft indicated erroneous readings, or the behavior of the weapons is substantially different from the behavior described by the ballistics tables. Additional data under more precise initial conditions would have to be gathered before any definite conclusions can be drawn.

	OLD COEFFICIENT	NEW COEFFICIENTS
AVERAGE ABSOLUTE DIFFERENCE IN DOWN RANGE TRAVEL	247.00	247.00
AVERAGE ABSOLUTE DIFFERENCE IN TIME OF FALL	0.1299	0.1573
AVERAGE PER CENT DIFFERENCE IN DOWN RANGE TRAVEL	11.973	12.435
AVERAGE PER CENT DIFFERENCE IN TIME OF FALL	1.659	2.091

**TABLE 4. SUMMARY OF BALLISTICS TABLES VS. ACTUAL
DELIVERY DATA**

VII. CONCLUSION

The radical cost reductions in computer hardware brought about by large scale integration (LSI) have introduced an opportunity to construct micro-computer based airborne tactical systems which reduce the hardware costs by at least an order of magnitude. To establish the feasibility of constructing such a system requires that two questions be answered in the affirmative.

1. Is the computation sufficiently accurate?
2. Is the computation fast enough to satisfy real time requirements?

This study concentrated on the first question. As the results indicate, the 16 bit floating point mantissa is sufficiently accurate for the ballistic calculations.

As a byproduct, the BOEING-Naval Weapons Center algorithm was compared with the published ballistics tables. Although some of the weapons displayed close agreement, others revealed substantial discrepancies which remain unresolved.

The most significant and unexpected finding is related to the experimental data generated by the bombardiers based at Naval Air Station Whidbey Island. If the initial

conditions recorded by the aircraft's instruments are used to predict where the weapon would impact the ground, then the ballistics tables predict that the weapons land consistently more than 10% short of where they actually landed. Either the recorded initial conditions are incorrect or the ballistics tables do not predict reality for this weapon.

Although the micro-computer is substantially slower in executing arithmetically complex tasks when compared to a mini-computer, several micro-computers can be used as dedicated machines for specific tasks. Such a distributed system can operate sufficiently fast to solve the real time problem.

APPENDIX A

This appendix compares the results of the FORTRAN and PLM versions of the ballistics algorithm. The absolute difference in down range travel and time of fall is presented.

WEAPON COEFFICIENTS FOR IDNO 4

CFORM1 = 0.0039235 DKG1 = 0.0027540 DM1 = 0.0 VMUZ = 0. DS = 0.0
 CFORM2 = 0.0 DKG2 = 0.0 DM2 = 0.0 FN = 0. SL = 0.0
 ITYPE = -1 IREF = 2 VE = 0.0
 IBCTH = 1 DMAX = 3.00 DTI = 2.00

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTTRAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
10.	300.	500.	8.93	4181.	0.02	0.21	-0.09
10.	300.	3000.	17.07	7576.	0.00	0.00	0.00
10.	350.	500.	17.58	5151.	0.00	0.03	0.00
10.	350.	3000.	17.64	8970.	0.00	0.02	0.00
10.	400.	500.	10.23	6193.	0.01	0.17	-0.02
10.	400.	3000.	18.21	10385.	0.01	0.07	-0.01
10.	450.	500.	10.87	17282.	0.03	0.23	-0.08
10.	450.	3000.	18.77	11792.	0.00	0.15	-0.02
10.	500.	500.	11.54	8376.	0.00	0.03	0.00
10.	500.	3000.	19.35	13147.	0.00	0.00	0.00
10.	550.	500.	12.15	9438.	0.01	0.10	-0.01
10.	550.	3000.	19.88	14400.	0.01	0.04	-0.00
10.	550.	500.	5.64	13736.	0.00	0.05	-0.01
0.	300.	15000.	33.06	13728.	-0.00	-0.01	-0.00
0.	350.	500.	33.25	13177.	-0.00	-0.06	-0.01
0.	350.	15000.	33.25	15804.	-0.00	-0.07	-0.01
0.	400.	500.	33.46	3613.	0.00	0.00	-0.01
0.	450.	500.	33.66	17788.	0.00	0.07	-0.01
0.	450.	15000.	33.69	4039.	0.00	0.07	-0.01
0.	500.	500.	33.68	19653.	0.01	0.02	-0.00
0.	500.	15000.	33.94	4449.	0.01	0.09	-0.01
0.	550.	500.	34.20	21322.	0.01	0.03	-0.00
0.	550.	15000.	34.20	4832.	0.01	0.10	-0.01
0.	550.	500.	34.20	22765.	0.02	0.06	-0.00
-10.	300.	500.	12.77	1710.	0.00	0.06	-0.01
-10.	350.	3500.	12.77	5815.	0.02	0.19	-0.02
-10.	350.	500.	14.28	1855.	0.02	0.06	-0.01
-10.	350.	4500.	14.28	7553.	0.02	0.16	-0.01
-10.	400.	500.	13.07	1977.	0.00	0.01	-0.01
-10.	400.	5500.	16.22	9359.	0.02	0.09	-0.00

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
-10.	450.	1000.	4.91	3503.	0.03	0.68	-0.18
-10.	450.	7000.	18.60	11657.	0.03	0.15	-0.01
-10.	500.	1000.	4.70	13692.	0.03	0.15	-0.14
-10.	500.	8000.	20.06	13476.	0.01	0.07	-0.00
-10.	550.	1000.	4.51	3852.	0.03	0.67	-0.12
-10.	550.	9000.	21.52	15223.	0.00	0.02	-0.00
-20.	300.	1000.	4.24	1959.	0.01	0.26	-0.03
-20.	300.	5500.	14.65	6276.	0.02	0.16	-0.02
-20.	350.	1000.	3.88	2087.	0.01	0.17	-0.01
-20.	350.	7000.	16.61	8089.	0.03	0.10	-0.01
-20.	400.	1000.	3.57	2188.	0.00	0.13	-0.01
-20.	400.	8500.	18.41	9953.	0.02	0.19	-0.00
-20.	450.	1500.	4.66	3175.	0.04	0.16	-0.09
-20.	450.	10500.	20.79	12198.	0.03	0.15	-0.02
-20.	500.	1500.	4.38	3288.	0.02	0.44	-0.05
-20.	500.	12000.	22.46	14053.	0.03	0.13	-0.01
-20.	550.	1500.	4.15	3379.	0.02	0.08	-0.01
-20.	550.	13500.	24.14	15833.	0.02	0.23	-0.06
-30.	300.	1500.	4.69	1992.	0.04	0.44	-0.02
-30.	300.	8000.	16.88	6563.	0.01	0.33	-0.09
-30.	350.	1500.	4.25	2100.	0.00	0.22	-0.02
-30.	400.	10500.	19.63	8607.	0.00	0.72	-0.00
-30.	400.	13000.	4.97	2786.	0.02	0.08	-0.00
-30.	450.	2000.	22.10	10700.	0.03	0.61	-0.05
-30.	450.	15000.	4.59	12885.	0.01	0.05	-0.00
-30.	500.	15000.	23.91	3584.	0.00	0.03	-0.01
-30.	500.	15000.	5.26	13279.	0.00	0.01	-0.12
-30.	550.	2500.	4.90	3671.	0.05	1.25	-0.01
-30.	550.	15000.	22.93	13899.	0.06	0.28	-0.01
-40.	300.	2500.	6.14	12275.	0.01	0.06	-0.00
-40.	350.	12500.	21.37	7118.	0.00	0.06	-0.00
-40.	350.	15000.	5.57	2401.	0.00	0.06	-0.01
-40.	400.	15000.	23.36	8814.	0.00	0.18	-0.01
-40.	400.	3000.	5.97	2913.	0.01	0.14	-0.00
-40.	450.	15000.	22.45	9556.	0.03	0.03	-0.00
-40.	450.	3000.	5.51	3012.	0.00	0.03	-0.01
-40.	500.	15000.	21.71	10192.	0.01	0.20	-0.01
-40.	500.	3500.	5.90	3530.	0.01	0.00	-0.01
-40.	500.	15000.	21.08	10723.	0.00	0.00	-0.01

DEG	TAS	ALT	PLM NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME	DIST	PER CENT TIME	ERROR DIST
-40.	550.	4000.	6.28	4049.	30	4048.	0.03	-1.	0.41	-0.02
-40.	550.	15000.	20.51	1165.	20.55	1165.	0.04	-0.	0.10	-0.00
-45.	300.	15000.	23.62	7154.	23.62	7154.	0.00	-0.	0.02	0.00
-45.	350.	3000.	6.10	2418.	6.11	2419.	0.01	0.	0.19	0.01
-45.	350.	15000.	22.53	7887.	22.56	7887.	0.03	0.	0.15	0.00
-45.	400.	15000.	25.57	2516.	25.57	2516.	0.00	0.	0.07	0.02
-45.	450.	15000.	21.61	8522.	21.62	8522.	0.01	1.	0.27	0.01
-45.	450.	15000.	5.76	2961.	5.81	2961.	0.05	0.	0.17	0.00
-45.	500.	15000.	20.19	9061.	20.21	9061.	0.02	-0.	0.23	0.00
-45.	500.	15000.	6.11	3409.	6.13	3409.	0.02	-0.	0.32	0.00
-45.	550.	15000.	20.49	9507.	20.52	9508.	0.03	1.	0.10	-0.01
-45.	550.	15000.	6.55	3856.	6.56	3855.	0.01	-0.	0.56	0.01
-45.	550.	15000.	19.54	9876.	19.56	9877.	0.02	1.	0.03	0.01
-60.	300.	15000.	21.92	1801.	21.94	1801.	0.02	0.	0.45	0.01
-60.	300.	15000.	6.78	1733.	6.81	1733.	0.04	0.	0.40	0.03
-60.	350.	15000.	20.68	1895.	20.72	1895.	0.04	-0.	0.20	0.01
-60.	400.	15000.	7.66	5172.	7.72	5172.	0.06	0.	0.53	0.00
-60.	400.	15000.	19.66	5542.	19.66	5542.	0.00	0.	0.20	0.00
-60.	450.	15000.	7.63	2662.	7.66	2662.	0.03	0.	0.37	0.01
-60.	450.	15000.	18.71	5850.	18.76	5849.	0.05	-0.	0.25	0.01
-60.	500.	15000.	8.38	3152.	8.34	3152.	0.04	-0.	0.31	0.00
-60.	500.	15000.	17.98	6101.	17.99	6101.	0.03	-0.	0.09	0.01
-60.	550.	15000.	8.41	3432.	8.45	3432.	0.04	-0.	0.41	0.01
-60.	550.	15000.	17.36	3430.	17.36	3430.	0.00	0.	0.11	0.01

WEAPON COEFFICIENTS FOR IDNO 5

CFORM1 = 0.0039077 DKG1 = 0.0063648 DM1 = 0.0 VMUZ = 0.0 DS = 0.0
 CFORM2 = 0.0 DKG2 = 0.0 DM2 = 0.0 FN = 0.0 SL = 0.0
 ITYPE = -1 IREF = 3 VE = 0.0
 IBOOTH = 1 DMAX = 3.00 DTI = 1.00

PLM VERSION				FORTRAN VERSION			
BOEING ALGORITHM				BOEING ALGORITHM			
DEG	TAS	ALT	NPS TIME	DEG	TAS	ALT	NPS TIME
10.	300.	500.	8.89	10.	300.	500.	8.95
10.	300.	300.	17.12	10.	300.	300.	17.18
10.	350.	500.	17.56	10.	350.	500.	17.59
10.	350.	300.	17.67	10.	350.	300.	17.76
10.	400.	500.	17.19	10.	400.	500.	17.23
10.	400.	300.	18.30	10.	400.	300.	18.33
10.	450.	500.	18.87	10.	450.	500.	18.88
10.	450.	300.	18.87	10.	450.	300.	18.90
10.	500.	500.	18.42	10.	500.	500.	18.91
10.	500.	300.	19.40	10.	500.	300.	19.46
10.	550.	500.	19.99	10.	550.	500.	19.51
10.	550.	300.	19.99	10.	550.	300.	19.46
10.	300.	500.	5.61	10.	300.	500.	5.66
0.	300.	1500.	33.66	0.	300.	1500.	33.70
0.	350.	1500.	33.86	0.	350.	1500.	33.98
0.	350.	500.	33.62	0.	350.	500.	33.67
0.	400.	500.	33.86	0.	400.	500.	33.90
0.	400.	1500.	34.08	0.	400.	1500.	34.12
0.	450.	500.	34.63	0.	450.	500.	34.70
0.	450.	1500.	34.30	0.	450.	1500.	34.36
0.	500.	500.	34.64	0.	500.	500.	34.71
0.	500.	1500.	34.53	0.	500.	1500.	34.60
0.	550.	500.	34.67	0.	550.	500.	34.73
0.	550.	1500.	34.77	0.	550.	1500.	34.85
-10.	300.	500.	12.92	-10.	300.	500.	12.95
-10.	300.	350.	13.72	-10.	300.	350.	13.80
-10.	350.	500.	14.72	-10.	350.	500.	14.82
-10.	400.	500.	16.47	-10.	400.	500.	16.52
				DIFFERENCES			
				TIME	DIST		
				0.06	-6.		
				0.03	14.		
				0.09	15.		
				0.04	16.		
				0.03	16.		
				0.06	20.		
				0.04	16.		
				0.09	21.		
				0.05	21.		
				0.12	24.		
				0.07	-1.		
				0.04	-1.		
				0.05	-14.		
				0.04	-6.		
				0.06	-18.		
				0.06	-23.		
				0.05	-10.		
				0.07	-28.		
				0.06	-11.		
				0.08	-35.		
				0.08	10.		
				0.00	6.		
				0.03	0.		
				0.09	2.		
				0.00	0.		
				0.05	9.		
				PER CENT ERROR			
				TIME	DIST		
				0.36	71		
				0.29	0.		
				0.50	0.		
				0.39	0.		
				0.16	0.		
				0.55	0.		
				0.27	0.		
				0.28	0.		
				0.97	0.		
				0.79	0.		
				0.19	0.		
				0.12	0.		
				0.13	0.		
				0.12	0.		
				0.29	0.		
				0.14	0.		
				0.22	0.		
				0.20	0.		
				0.04	0.		
				0.61	0.		
				0.28	0.		

DEG	TAS	ALT	PLM NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME	DIFFERENCES DIST	PER CENT TIME	PER CENT DIST	ERROR DIST
-10.	450.	1000.	4.95	3482.	4.99	3476.	0.05	-6.	92	-0.17	17
-10.	450.	6500.	17.74	10931.	18.12	10934.	0.13	-3.	00	-0.03	03
-10.	500.	1000.	19.55	12670.	19.78	12665.	0.04	-5.	00	-0.14	14
-10.	550.	1500.	21.55	13829.	21.66	13824.	0.06	-14.	00	-0.11	11
-10.	550.	8500.	13.26	14361.	14.59	14358.	0.04	19.	00	-0.12	12
-20.	300.	1000.	13.91	19553.	14.28	19553.	0.02	-19.	00	-0.03	03
-20.	350.	1500.	16.08	5844.	16.92	5847.	0.06	-3.	00	-0.05	05
-20.	350.	6500.	16.91	2080.	17.11	2080.	0.01	-7.	00	-0.01	01
-20.	400.	1000.	17.60	7603.	17.11	7610.	0.03	0.	00	-0.09	09
-20.	400.	8000.	17.93	2181.	18.06	2181.	0.00	0.	00	-0.00	00
-20.	450.	1500.	19.70	94163.	19.74	94160.	0.04	-3.	00	-0.08	08
-20.	450.	19500.	19.81	31241.	19.87	31249.	0.07	-8.	00	-0.06	06
-20.	500.	1500.	21.63	11276.	21.45	11274.	0.03	-13.	00	-0.10	10
-20.	500.	11000.	21.32	13039.	21.62	13053.	0.02	13.	00	-0.04	04
-20.	550.	12500.	23.72	13366.	23.20	13365.	0.03	-1.	00	-0.07	07
-30.	300.	1500.	23.43	14781.	23.74	14786.	0.10	-10.	00	-0.06	06
-30.	300.	1500.	16.23	6210.	16.47	6213.	0.04	-4.	00	-0.06	06
-30.	350.	10000.	19.35	2095.	19.39	2094.	0.05	-6.	00	-0.02	02
-30.	400.	12000.	21.36	81777.	21.06	81775.	0.02	-3.	00	-0.07	07
-30.	450.	12000.	23.64	2876.	23.39	2875.	0.04	-2.	00	-0.08	08
-30.	500.	14500.	23.79	12021.	24.67	12025.	0.08	-5.	00	-0.04	04
-30.	550.	15000.	23.26	13578.	23.94	13572.	0.15	-5.	00	-0.14	14
-30.	550.	15000.	23.96	13663.	24.03	13659.	0.07	-4.	00	-0.04	04
-40.	300.	12500.	23.42	13612.	23.55	13620.	0.12	-9.	00	-0.12	12
-40.	350.	12500.	21.21	62815.	21.59	62821.	0.01	2.	00	-0.06	06
-40.	350.	15000.	23.52	2397.	23.67	2393.	0.07	-3.	00	-0.05	05
-40.	400.	15000.	23.82	8643.	23.97	8644.	0.15	-1.	00	-0.01	01
-40.	400.	15000.	23.90	2910.	23.08	2904.	0.09	-5.	00	-0.05	05
-40.	450.	15000.	23.50	9373.	23.59	9378.	0.09	-4.	00	-0.05	05
-40.	450.	13000.	23.57	3007.	23.30	3003.	0.05	-8.	00	-0.08	08
-40.	500.	13500.	25.27	10003.	25.30	10010.	0.13	-10.	00	-0.02	02
-40.	500.	15000.	21.64	10553.	21.66	10543.	0.02	10.	00	-0.10	10

DEG	TAS	ALT	PLM NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME DIST	PER CENT TIME	ERROR DIST
-40.	550.	4000.	6:41	4028.	6:41	4033.	00	079	0:13
-40.	550.	15000.	20:95	10982.	21:11	10987.	0:17	0:79	0:05
-45.	300.	12500.	25:76	1975.	5:83	1972.	0:07	1:28	0:15
-45.	350.	15000.	24:19	7018.	24:21	7022.	0:03	0:11	0:06
-45.	350.	15000.	6:17	2408.	6:18	2411.	0:01	0:11	0:10
-45.	400.	15000.	23:07	7741.	23:15	7746.	0:09	0:38	0:06
-45.	400.	15000.	5:56	2512.	5:21	2509.	0:08	0:59	0:13
-45.	450.	15000.	22:16	8369.	22:21	8375.	0:04	1:19	0:07
-45.	450.	15000.	5:36	2958.	5:38	2952.	0:12	0:19	0:19
-45.	500.	15000.	21:30	8904.	21:31	8912.	0:01	0:10	0:11
-45.	500.	15000.	6:55	3394.	6:38	3398.	0:13	0:63	0:06
-45.	550.	15000.	20:55	3356.	20:68	3362.	0:13	0:14	0:12
-45.	550.	15000.	6:63	3837.	6:64	3842.	0:01	0:46	0:03
-60.	300.	15000.	20:01	9726.	20:10	9735.	0:08	0:23	0:06
-60.	300.	15000.	7:60	1794.	7:64	1794.	0:03	0:23	0:07
-60.	350.	15000.	22:48	4654.	22:49	4657.	0:05	0:46	0:06
-60.	350.	15000.	6:25	1887.	6:28	1888.	0:02	0:23	0:07
-60.	400.	15000.	21:27	5089.	21:28	5093.	0:02	0:15	0:04
-60.	400.	15000.	20:11	5367.	20:20	5368.	0:09	0:47	0:04
-60.	450.	15000.	20:73	5461.	20:78	5463.	0:05	0:22	0:03
-60.	450.	15000.	19:24	2651.	19:28	2652.	0:04	0:22	0:08
-60.	500.	15000.	18:40	5768.	18:51	5773.	0:10	0:20	0:10
-60.	500.	15000.	18:50	3138.	18:50	3138.	0:00	0:20	0:10
-60.	550.	15000.	18:50	6021.	18:50	6021.	0:00	0:20	0:10
-60.	550.	15000.	17:69	3418.	17:63	3417.	0:15	0:42	0:04
-60.	550.	15000.	17:69	6232.	17:84	6235.	0:15	0:42	0:04

WEAPON COEFFICIENTS FOR IDNO 6

CFORM1 = 0.0
 CFORM2 = 0.0
 I TYPE = -1
 IBOTH = 1
 DKG1 = 0.0212660
 DKG2 = 0.0
 IREF = 4
 DMAX = 2.00
 DM1 = 0.0
 DM2 = 0.0
 VE = 0.0
 DTI = 1.00
 VMUZ = 0.0
 FN = 0.0
 DS = 0.0
 SL = 0.0

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	DIFFERENCES DIST	PER CENT TIME	PER CENT ERROR
0.	300.	500.	5.69	5.69	0.01	-0.:	0.09	-0.01
0.	300.	1500.	10.03	10.03	-0.00	-0.:	-0.00	-0.00
0.	350.	500.	15.71	15.71	0.01	-1.:	0.10	-0.02
0.	350.	2000.	11.72	11.72	0.01	-0.:	0.05	-0.00
0.	400.	500.	11.77	11.77	0.01	-0.:	0.12	-0.00
0.	400.	2000.	11.74	11.74	0.01	-0.:	0.07	-0.00
0.	450.	500.	13.32	13.32	0.00	-0.:	0.14	-0.00
0.	450.	2500.	13.76	13.76	0.00	-0.:	0.16	-0.00
0.	500.	500.	13.39	13.39	0.00	-0.:	0.11	-0.00
0.	500.	2500.	13.77	13.77	0.00	-0.:	0.18	-0.00
0.	550.	500.	13.46	13.46	0.00	-0.:	0.10	-0.00
0.	550.	2500.	13.76	13.76	0.00	-0.:	0.12	-0.00
0.	550.	500.	13.56	13.56	0.00	-0.:	0.15	-0.00
-10.	300.	500.	10.33	10.33	0.00	-0.:	0.05	-0.00
-10.	350.	500.	11.65	11.65	0.00	-0.:	0.05	-0.00
-10.	350.	3000.	11.39	11.39	0.00	-0.:	0.02	-0.00
-10.	400.	500.	11.06	11.06	0.00	-0.:	0.01	-0.00
-10.	450.	500.	12.38	12.38	0.00	-0.:	0.01	-0.00
-10.	450.	3500.	13.27	13.27	0.00	-0.:	0.01	-0.00
-10.	500.	1000.	14.62	14.62	0.00	-0.:	0.02	-0.00
-10.	550.	1000.	14.22	14.22	0.00	-0.:	0.00	-0.00
-20.	300.	500.	11.93	11.93	0.00	-0.:	0.00	-0.00
-20.	350.	500.	11.95	11.95	0.00	-0.:	0.00	-0.00
-20.	350.	1000.	11.64	11.64	0.00	-0.:	0.00	-0.00
-20.	400.	1000.	12.23	12.23	0.00	-0.:	0.00	-0.00
-20.	400.	4500.	12.23	12.23	0.00	-0.:	0.01	-0.00

DEG	TAS	ALT	PLM NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
-20	450	1500	4.80	3150	4.81	3150	0.01	0.23	0.01
-20	450	1500	12.75	7444	12.76	7443	0.01	0.07	-0.01
-20	500	1500	13.50	3269	14.51	3269	0.01	0.12	0.01
-20	500	1500	13.23	8402	13.27	8403	0.00	0.01	0.00
-20	550	1500	13.75	3369	13.23	3369	0.00	0.04	0.01
-20	550	1500	13.79	9369	13.80	9369	0.01	0.07	-0.01
-30	300	1500	11.55	1981	11.80	1981	-0.01	0.17	0.00
-30	300	1500	11.35	4413	11.56	4413	0.00	0.04	0.01
-30	350	1500	12.72	2090	12.35	2090	0.00	0.05	0.01
-30	350	1500	12.14	5505	12.73	5505	0.01	0.07	0.00
-30	400	2000	13.80	2765	13.81	2765	0.00	0.08	0.01
-30	400	2000	13.79	6622	14.75	6622	0.01	0.21	0.00
-30	450	2000	13.41	2868	14.00	2868	0.02	0.12	0.00
-30	450	2000	13.99	7412	15.42	7412	0.00	0.07	0.00
-30	500	2500	14.91	3564	15.08	3564	0.02	0.11	0.00
-30	500	2500	14.07	8562	14.98	8562	0.00	0.02	0.01
-30	550	2500	15.16	3659	15.16	3659	0.00	0.00	0.00
-30	550	2500	15.19	9358	15.30	9358	0.00	0.02	0.01
-40	300	2500	13.71	2258	13.74	2258	0.01	0.06	0.00
-40	350	2500	15.25	4526	15.72	4526	0.00	0.00	0.00
-40	350	2500	15.19	2385	15.25	2385	0.00	0.00	0.00
-40	400	3000	15.89	5662	15.90	5663	0.00	0.00	0.00
-40	400	3000	15.68	6583	16.16	6584	0.01	0.08	0.00
-40	450	3000	16.52	2993	15.69	2993	0.00	0.15	0.00
-40	450	3000	16.12	7514	16.52	7514	0.00	0.02	0.01
-40	500	3500	17.12	3509	16.10	3509	0.00	0.01	0.00
-40	500	3500	17.46	8452	17.12	8452	0.00	0.01	0.00
-45	300	1200	17.69	9397	17.47	9397	0.01	0.07	0.00
-45	300	1200	17.90	4030	17.70	4030	0.01	0.04	0.00
-45	350	1200	16.24	1965	17.91	1965	0.01	0.19	0.00
-45	350	1200	16.28	4808	16.28	4808	0.00	0.00	0.01
-45	400	1300	16.73	2643	16.73	2643	0.00	0.03	0.02
-45	400	1300	15.86	2500	15.74	2500	0.01	0.05	0.01
-45	450	1100	17.09	6688	17.09	6688	0.00	0.17	0.00
-45	450	1250	18.09	2942	18.09	2942	0.00	0.01	0.00
-45	450	1250	18.41	7751	18.94	7751	0.01	0.08	0.00
-45	500	1350	19.34	3388	19.41	3388	0.00	0.05	0.01
-45	500	1350	19.34	8613	19.34	8614	0.00	0.01	0.01

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	DIFFERENCES DIST	PER CENT TIME	PER CENT ERROR	DIST
-45.	550.	4500.	6.69	6.70	0.01	1.	0.16	0.02	0.01
-45.	550.	15000.	20.32	20.32	0.00	1.	0.00	0.01	0.01
-60.	300.	4000.	27.76	27.77	0.01	0.	0.11	0.01	0.01
-60.	300.	15000.	23.25	23.24	-0.00	0.	-0.01	0.01	0.01
-60.	350.	4000.	27.03	27.03	0.00	0.	0.00	0.01	0.01
-60.	350.	15000.	21.99	22.00	0.02	-0.	0.07	-0.00	-0.00
-60.	400.	4000.	27.87	27.89	0.01	-0.	0.17	-0.00	-0.00
-60.	400.	15000.	20.85	20.86	0.01	-0.	0.06	-0.01	-0.01
-60.	450.	4500.	19.94	19.95	0.02	-0.	0.20	-0.00	-0.00
-60.	450.	15000.	18.80	19.81	0.01	0.	0.05	0.01	0.01
-60.	500.	4500.	18.66	18.66	0.01	0.	0.10	0.00	0.00
-60.	500.	15000.	18.83	18.84	0.01	0.	0.07	0.00	0.00
-60.	550.	4500.	18.69	18.70	0.01	0.	0.12	0.01	0.01
-60.	550.	15000.	17.92	17.94	0.02	0.	0.10	0.01	0.01
			3838.	3838.					
			9701.	9702.					
			1785.	1785.					
			4553.	4553.					
			1880.	1880.					
			4987.	4986.					
			2355.	2355.					
			5363.	5363.					
			2691.	2691.					
			3125.	3125.					
			5978.	5978.					
			3413.	3413.					
			6230.	6230.					

WEAPON CCEFFICIENTS FOR IDNO 7

CFORM1 = 2.5703993 DM1 = 0.0 VMUZ = DS = 0.0
 CFORM2 = 0.0 DM2 = 0.0 FN = SL = 0.0
 ITYPE = -1 VE = 0.0
 IBOOTH = 1 DTI = 3.00

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
10.	300.	500.	8.93	4360.	0.00	0.02	0.00
10.	350.	3000.	16.77	8063.	0.00	0.10	-0.02
10.	350.	500.	19.58	5435.	0.00	0.06	-0.01
10.	350.	3000.	17.35	9652.	0.00	0.00	-0.00
10.	400.	500.	10.26	6616.	0.00	0.10	-0.05
10.	400.	3000.	17.92	11312.	0.00	0.16	-0.00
10.	450.	500.	10.94	17903.	0.00	0.02	-0.11
10.	450.	3000.	18.49	13041.	0.00	0.04	-0.00
10.	450.	500.	11.67	19277.	0.00	0.02	-0.01
10.	500.	3000.	19.08	14836.	0.00	0.08	-0.01
10.	500.	500.	12.39	10762.	0.00	0.05	-0.01
10.	550.	3000.	19.67	16695.	0.00	0.12	-0.02
10.	550.	500.	17.91	3939.	0.00	0.17	-0.01
0.	300.	1000.	31.30	14884.	0.00	0.07	-0.10
0.	350.	1500.	31.91	4585.	0.00	0.19	-0.01
0.	350.	1500.	31.37	17285.	0.00	0.10	-0.11
0.	400.	1500.	31.91	5229.	0.00	0.22	-0.13
0.	400.	1500.	31.45	19656.	0.00	0.11	-0.01
0.	450.	1500.	31.92	5869.	0.00	0.24	-0.14
0.	450.	1500.	31.56	21998.	0.00	0.14	-0.01
0.	500.	1500.	31.73	6507.	0.00	0.27	-0.16
0.	550.	1500.	31.98	24291.	0.00	0.18	-0.02
0.	550.	1500.	31.73	7142.	0.00	0.30	-0.17
0.	300.	1500.	31.98	26403.	0.00	0.22	-0.03
-10.	300.	1500.	31.64	27775.	0.00	0.25	-0.01
-10.	350.	1500.	12.43	6018.	0.00	0.05	-0.01
-10.	350.	1500.	15.35	3066.	0.00	0.02	-0.01
-10.	350.	1500.	14.39	8381.	0.00	0.03	-0.01
-10.	400.	1500.	15.08	3321.	0.00	0.01	-0.01
-10.	400.	6000.	16.35	10371.	0.02	0.12	-0.01

DEG	TAS	ALT	PLM NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME DIST	PER CENT TIME	PER CENT ERROR DIST
-10:	450:	1000:	4:82	3546:	4:82	3546:	0:00	0:01	0:01
-10:	450:	1500:	18:36	12960:	18:39	12960:	0:01	0:00	-0:00
-10:	500:	1000:	4:59	3744:	4:59	3744:	0:00	0:01	-0:00
-10:	500:	1500:	20:18	15652:	20:18	15652:	0:00	0:02	0:00
-10:	550:	1000:	4:37	3918:	4:37	3918:	0:00	0:05	0:00
-10:	550:	1500:	22:58	18854:	22:52	18850:	0:05	0:20	0:02
-20:	300:	11500:	5:12	2682:	5:62	2682:	0:00	0:03	-0:01
-20:	350:	1500:	14:28	6496:	14:12	6496:	0:00	0:01	0:01
-20:	350:	1500:	15:28	2890:	15:28	2890:	0:00	0:01	0:00
-20:	400:	1500:	16:50	8814:	16:59	8812:	0:02	0:13	-0:02
-20:	400:	1500:	18:90	3060:	18:44	3060:	0:00	0:00	0:00
-20:	450:	1500:	20:56	11230:	20:56	11230:	0:01	0:06	0:00
-20:	450:	1500:	22:25	13767:	22:25	13767:	0:00	0:02	0:00
-20:	500:	11500:	4:56	13316:	4:56	13316:	0:00	0:01	0:00
-20:	500:	14000:	20:28	16735:	20:25	16730:	0:03	0:28	-0:01
-20:	550:	1500:	22:09	4348:	22:09	4348:	0:00	0:01	0:03
-20:	550:	1500:	23:74	18491:	23:09	18491:	0:06	0:03	-0:01
-30:	300:	1500:	16:68	2080:	16:81	2079:	0:01	0:03	0:00
-30:	350:	18500:	4:28	7079:	4:62	7079:	0:02	0:15	-0:01
-30:	350:	2000:	15:31	2679:	15:31	2679:	0:00	0:02	0:02
-30:	400:	11500:	19:87	9556:	19:65	9555:	0:03	0:13	-0:01
-30:	400:	14500:	22:08	2803:	22:87	2803:	0:03	0:11	0:01
-30:	450:	15000:	21:48	12902:	21:48	12902:	0:00	0:13	0:01
-30:	500:	15000:	21:86	13399:	21:88	13398:	0:03	0:10	0:00
-30:	500:	15000:	21:04	3620:	21:05	3620:	0:00	0:17	0:00
-30:	550:	15000:	21:24	14269:	21:25	14269:	0:01	0:01	0:00
-30:	550:	15000:	20:76	3711:	20:77	3711:	0:00	0:03	0:00
-40:	300:	15000:	25:99	14979:	25:77	14980:	0:01	0:03	0:00
-40:	350:	15000:	21:17	2293:	21:00	2293:	0:01	0:03	0:01
-40:	350:	15000:	21:42	7817:	21:42	7817:	0:00	0:03	0:00
-40:	400:	15000:	21:68	9269:	21:66	9269:	0:02	0:08	0:00
-40:	400:	15000:	25:78	2937:	25:77	2937:	0:00	0:04	0:01
-40:	450:	15000:	20:61	10066:	20:31	10065:	0:00	0:02	0:00
-40:	450:	15000:	19:74	3035:	19:80	3035:	0:06	0:29	0:02
-40:	500:	15000:	19:63	10770:	19:63	10768:	0:00	0:05	-0:02
-40:	500:	15000:	19:02	3565:	19:06	3566:	0:04	0:20	-0:01
-40:	500:	15000:	19:02	11372:	19:06	11371:	0:04	0:20	-0:01

DEG	TAS	ALT	PLM NPS TIME	VERSION MODIFIED BOEING ALGORITHM DIST	FORTAN NPS TIME	VERSION MODIFIED BOEING ALGORITHM DIST	DIFFERENCES TIME DIST	PER CENT TIME	ERROR DIST
-40.	550.	4000.	5:47	4101.	5:49	4102.	0:02	0:09	0:02
-45.	550.	15000.	18:43	11855.	18:53	11855.	0:00	0:13	0:02
-45.	300.	15000.	22:02	11991.	22:04	11991.	0:00	0:03	0:00
-45.	350.	15000.	25:03	7496.	25:09	7497.	0:00	0:05	0:02
-45.	350.	15000.	20:39	2437.	20:50	2438.	0:01	0:03	0:01
-45.	400.	15000.	5:39	8267.	5:39	8268.	0:00	0:02	0:02
-45.	400.	15000.	19:81	2533.	19:86	2533.	0:05	0:25	-0:01
-45.	450.	15000.	15:62	2594.	15:67	2594.	0:00	0:04	0:02
-45.	450.	15000.	18:90	2985.	18:95	2986.	0:03	0:17	0:00
-45.	500.	15000.	5:90	9530.	5:90	9530.	0:00	0:08	0:02
-45.	500.	15000.	18:16	3443.	18:18	3444.	0:01	0:08	0:01
-45.	550.	15000.	16:10	10028.	16:17	10029.	0:01	0:12	0:01
-45.	550.	15000.	17:57	3905.	17:57	3906.	0:00	0:20	0:01
-60.	300.	15000.	17:29	10425.	17:31	10427.	0:01	0:02	-0:01
-60.	300.	15000.	20:43	1818.	20:43	1818.	0:00	0:12	0:01
-60.	350.	15000.	6:51	4928.	6:58	4928.	0:01	0:14	0:00
-60.	400.	15000.	19:14	1910.	19:17	1910.	0:03	0:05	-0:01
-60.	400.	15000.	17:25	5382.	17:27	5381.	0:02	0:25	0:01
-60.	450.	15000.	18:03	2401.	18:04	2401.	0:01	0:41	-0:01
-60.	450.	15000.	16:29	5767.	16:26	5769.	0:02	0:26	-0:03
-60.	500.	15000.	16:76	6095.	16:05	6093.	0:07	0:41	-0:03
-60.	500.	15000.	17:18	3197.	17:20	3197.	0:03	0:29	0:01
-60.	550.	15000.	16:15	6363.	16:23	6363.	0:05	0:20	-0:01
-60.	550.	15000.	15:55	3490.	15:58	3489.	0:03	0:18	0:00
-60.	550.	15000.	15:55	6576.	15:58	6576.	0:03	0:18	0:00

WEAPON COEFFICIENTS FOR IDNO 8

CFORM1 = 0.0
 CFORM2 = 0.0
 ITYPE = -1
 IBOOTH = 1
 DKG1 = 0.0097570
 DKG2 = 0.0
 IREF = 4
 DMAX = 3.00
 DM1 = 0.0
 DM2 = 0.0
 VE = 0.0
 DTI = 2.00
 VMUZ = 0.0
 FN = 0.0
 DS = 0.0
 SL = 0.0

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTTRAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
10.	300.	500.	8.93	8.94	0.01	0.16	-0.07
10.	300.	300.	16.59	16.97	0.02	0.13	-0.02
10.	350.	500.	17.54	17.55	0.00	0.02	-0.00
10.	350.	300.	17.54	17.55	0.00	0.02	-0.00
10.	400.	500.	18.12	18.26	0.01	0.09	-0.02
10.	400.	300.	18.12	18.26	0.01	0.05	-0.01
10.	450.	500.	10.91	10.93	0.02	0.19	-0.07
10.	450.	300.	18.61	18.71	0.00	0.13	-0.01
10.	500.	500.	11.61	11.61	0.00	0.00	0.00
10.	500.	300.	19.29	19.29	0.00	0.00	0.00
10.	550.	500.	12.27	12.30	0.01	0.10	-0.02
10.	550.	300.	19.87	19.88	0.01	0.03	-0.00
10.	300.	1000.	32.41	32.42	0.02	0.05	-0.01
0.	350.	1500.	32.41	32.42	0.02	0.05	-0.01
0.	350.	1500.	32.54	32.56	0.02	0.08	-0.01
0.	400.	1500.	32.02	32.03	0.01	0.09	-0.01
0.	400.	1500.	32.02	32.03	0.01	0.09	-0.01
0.	450.	1500.	32.04	32.04	0.00	0.10	-0.01
0.	450.	1500.	32.80	32.83	0.03	0.09	-0.02
0.	500.	1500.	32.05	32.06	0.01	0.11	-0.01
0.	500.	1500.	32.93	32.97	0.04	0.17	-0.01
0.	550.	1500.	32.66	32.66	0.00	0.01	-0.00
0.	550.	1500.	33.11	33.11	0.00	0.01	-0.00
0.	550.	1500.	33.11	33.11	0.00	0.01	-0.00
-10.	300.	3500.	12.70	12.71	0.02	0.13	-0.01
-10.	350.	4500.	15.42	15.42	0.00	0.02	-0.00
-10.	350.	4500.	15.41	15.43	0.01	0.10	-0.01
-10.	400.	6000.	15.15	15.15	0.00	0.16	-0.02
-10.	400.	6000.	16.18	16.18	0.00	0.16	-0.02

DEG	TAS	ALT	PLM NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME DIST	PER CENT TIME DIST	ERROR DIST
-40.	550.	4000.	6.08	4079.	6.09	4080.	0.01	0.21	0.00
-40.	550.	1500.	19.72	11636.	19.08	11637.	0.00	0.00	0.01
-45.	300.	1500.	5.98	1982.	5.73	1983.	0.00	0.07	0.01
-45.	350.	1500.	22.98	7278.	23.02	7278.	0.04	0.16	-0.01
-45.	350.	1500.	6.04	2425.	6.05	2426.	0.01	0.14	0.01
-45.	400.	1500.	21.88	8030.	21.89	8030.	0.01	0.03	0.01
-45.	400.	1500.	5.51	2522.	5.51	2523.	0.00	0.05	0.02
-45.	450.	1500.	20.80	8694.	20.81	8694.	0.03	0.16	0.00
-45.	450.	1500.	5.85	2971.	5.86	2972.	0.01	0.11	0.02
-45.	500.	1500.	19.85	9280.	19.86	9281.	0.01	0.14	0.01
-45.	500.	1500.	6.06	3426.	6.07	3426.	0.01	0.18	0.00
-45.	550.	1500.	18.91	3885.	18.95	3885.	0.04	0.28	0.00
-45.	550.	1500.	6.28	9801.	6.30	9801.	0.02	0.02	0.01
-45.	550.	1500.	18.09	10260.	18.11	10261.	0.01	0.02	0.01
-60.	300.	1500.	17.46	1807.	17.46	1807.	0.00	0.00	0.01
-60.	350.	1500.	21.35	4804.	21.35	4804.	0.00	0.00	0.01
-60.	350.	1500.	6.71	1901.	6.73	1902.	0.02	0.02	-0.01
-60.	400.	1500.	20.77	12552.	20.08	12552.	0.01	0.06	0.01
-60.	400.	1500.	7.88	2386.	7.47	2386.	0.00	0.39	0.01
-60.	450.	1500.	17.48	5674.	18.92	5637.	0.04	0.10	0.01
-60.	450.	1500.	17.87	2674.	17.49	2675.	0.00	0.03	0.01
-60.	500.	1500.	18.07	3174.	18.08	3174.	0.01	0.15	0.00
-60.	500.	1500.	16.85	6255.	16.89	6255.	0.04	0.23	0.00
-60.	550.	1500.	8.05	3467.	8.06	3467.	0.01	0.16	0.01
-60.	550.	1500.	15.98	6503.	16.00	6503.	0.01	0.07	0.00

WEAPON COEFFICIENTS FOR IONO 9

CFORM1 = 2.0639992

DKG1 = 0.0

DM1 = 0.0

VMUZ =

DS = 0.0

CFORM2 = 0.0

DKG2 = 0.0

DM2 = 0.0

FN =

0.0

SL = 0.0

ITYPE = -1

IREF = 1

VE = 0.0

DTI = 3.00

0.0

PLM VERSION
NPS MODIFIED
BOEING ALGORITHM
TIME

FORTAN VERSION
NPS MODIFIED
BOEING ALGORITHM
TIME

DEG

TAS

ALT

PLM VERSION
NPS MODIFIED
BOEING ALGORITHM
TIME

FORTAN VERSION
NPS MODIFIED
BOEING ALGORITHM
TIME

DIFFERENCES
TIME

PER CENT
TIME

ERROR
DIST

10. 300. 500. 4379. 8.93 4379. 4379. 0.00 0.02 0.00

10. 300. 500. 8109. 16.76 8109. 8109. 0.01 0.01 0.02

10. 300. 500. 5465. 19.59 5465. 5465. 0.00 0.00 0.01

10. 350. 500. 9720. 17.32 9720. 9720. 0.00 0.00 0.00

10. 350. 500. 6661. 10.27 6661. 6661. 0.00 0.00 0.00

10. 400. 500. 11408. 17.89 11408. 11408. 0.00 0.00 0.00

10. 450. 500. 17967. 10.96 17967. 17967. 0.00 0.00 0.00

10. 450. 500. 13171. 18.47 13171. 13171. 0.00 0.00 0.00

10. 500. 500. 93370. 11.69 93370. 93370. 0.00 0.00 0.00

10. 500. 500. 15006. 19.05 15006. 15006. 0.00 0.00 0.00

10. 550. 500. 10887. 12.41 10887. 10887. 0.00 0.00 0.00

10. 550. 500. 16913. 19.65 16913. 16913. 0.00 0.00 0.00

10. 600. 500. 12402. 13.10 12402. 12402. 0.00 0.00 0.00

10. 600. 500. 18727. 20.25 18727. 18727. 0.00 0.00 0.00

10. 650. 500. 13715. 20.78 13715. 13715. 0.00 0.00 0.00

10. 650. 500. 20200. 20.78 20200. 20200. 0.00 0.00 0.00

10. 650. 500. 4825. 20.78 4825. 4825. 0.00 0.00 0.00

10. 650. 500. 14996. 20.78 14996. 14996. 0.00 0.00 0.00

10. 650. 500. 17428. 31.15 17428. 17428. 0.00 0.00 0.00

10. 650. 500. 5247. 31.91 5247. 5247. 0.00 0.00 0.00

10. 650. 500. 19839. 31.91 19839. 19839. 0.00 0.00 0.00

10. 650. 500. 22219. 31.91 22219. 22219. 0.00 0.00 0.00

10. 650. 500. 6535. 31.91 6535. 6535. 0.00 0.00 0.00

10. 650. 500. 27176. 31.91 27176. 27176. 0.00 0.00 0.00

10. 650. 500. 26770. 31.91 26770. 26770. 0.00 0.00 0.00

10. 650. 500. 28414. 32.17 28414. 28414. 0.00 0.00 0.00

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
0:	650:	500:	5858.	5858.	0:00	0:04	-0:00
-10:	650:	1500:	29768.	29767.	0:00	0:00	-0:00
-10:	300:	1300:	6037.	6037.	0:00	0:03	0:00
-10:	350:	1000:	3071.	3071.	0:00	0:04	0:00
-10:	350:	1500:	8418.	8418.	0:00	0:02	0:00
-10:	400:	1000:	3327.	3327.	0:00	0:01	0:00
-10:	400:	1500:	10917.	10917.	0:00	0:00	0:00
-10:	450:	1000:	13553.	13553.	0:01	0:00	0:00
-10:	450:	1500:	13751.	13752.	0:00	0:02	-0:01
-10:	500:	1000:	16263.	16263.	0:00	0:02	0:00
-10:	500:	1500:	19483.	19484.	0:00	0:06	0:00
-10:	550:	11500:	15542.	15543.	0:00	0:05	0:00
-10:	600:	13000:	22000.	21999.	0:03	0:11	-0:00
-10:	650:	14500:	24719.	24719.	0:00	0:05	0:00
-20:	300:	1500:	26886.	26886.	0:00	0:03	0:00
-20:	300:	1500:	6517.	6517.	0:00	0:00	0:00
-20:	350:	1500:	2893.	2894.	0:00	0:01	0:00
-20:	350:	1500:	8849.	8848.	0:02	0:10	-0:01
-20:	400:	1500:	3064.	3064.	0:00	0:08	-0:01
-20:	400:	1000:	11664.	11663.	0:00	0:02	-0:00
-20:	450:	12000:	14220.	14220.	0:01	0:00	-0:00
-20:	450:	15000:	17570.	17570.	0:00	0:03	0:00
-20:	500:	15000:	14355.	14355.	0:00	0:01	0:00
-20:	500:	15000:	18632.	18632.	0:00	0:01	0:00
-20:	600:	15000:	14470.	14470.	0:00	0:01	0:00
-20:	600:	15000:	19467.	19467.	0:00	0:04	0:00
-20:	650:	15000:	45553.	45551.	0:00	0:00	0:00
-30:	300:	15000:	20142.	20141.	0:00	0:03	0:00
-30:	300:	9000:	7372.	7372.	0:00	0:01	0:00
-30:	350:	12000:	2681.	2681.	0:00	0:02	0:00
-30:	350:	12000:	2806.	2806.	0:00	0:00	0:00
-30:	400:	15000:	12478.	12476.	0:03	0:15	-0:01

DEG	TAS	ALT	PLM NPS TIME	VERSION MODIFIED BOEING ALGORITHM DIST	FORTAN NPS TIME	VERSION MODIFIED BOEING ALGORITHM DIST	DIFFERENCES TIME DIST	PER CENT TIME ERROR	DIST
-30.	450.	2500.	5.42	3513.	5.42	3513.	0.00	0.01	0.01
-30.	450.	1500.	21.03	13468.	21.73	13468.	0.00	-0.01	-0.01
-30.	500.	2500.	5.06	3624.	5.04	3624.	0.00	-0.01	-0.01
-30.	550.	1500.	21.06	14345.	21.07	14345.	0.00	-0.00	-0.00
-30.	550.	2500.	20.57	15071.	20.69	15071.	0.00	0.00	0.00
-30.	600.	1500.	5.20	4444.	5.20	4444.	0.00	0.00	0.00
-30.	600.	2500.	20.70	15645.	20.71	15645.	0.00	0.00	0.00
-30.	650.	1500.	5.81	16120.	5.89	16120.	0.00	0.00	0.00
-30.	650.	2500.	19.98	2295.	19.89	2295.	0.00	0.00	0.00
-40.	300.	1500.	5.57	8037.	5.58	8037.	0.00	0.00	0.00
-40.	350.	2500.	21.41	2419.	21.41	2419.	0.00	0.00	0.00
-40.	350.	1500.	21.51	9309.	21.52	9309.	0.00	0.00	0.00
-40.	400.	2500.	5.76	2940.	5.77	2940.	0.00	0.00	0.00
-40.	400.	1500.	20.53	10109.	20.53	10109.	0.00	0.00	0.00
-40.	450.	2500.	5.30	3038.	5.30	3038.	0.00	0.00	0.00
-40.	450.	1500.	19.60	10816.	19.65	10816.	0.00	0.00	0.00
-40.	500.	2500.	5.61	3568.	5.61	3568.	0.00	0.00	0.00
-40.	550.	1500.	18.87	11420.	18.90	11420.	0.00	0.00	0.00
-40.	550.	2500.	18.89	11914.	18.89	11914.	0.00	0.00	0.00
-40.	600.	1500.	16.17	4640.	16.18	4640.	0.00	0.00	0.00
-40.	600.	2500.	17.83	12301.	17.84	12301.	0.00	0.00	0.00
-40.	650.	1500.	17.42	15166.	17.50	15166.	0.00	0.00	0.00
-40.	650.	2500.	17.42	12626.	17.43	12626.	0.00	0.00	0.00
-45.	300.	1500.	5.90	7527.	5.92	7527.	0.00	0.00	0.00
-45.	350.	2500.	21.91	2439.	21.91	2439.	0.00	0.00	0.00
-45.	350.	1500.	5.76	8330.	5.77	8330.	0.00	0.00	0.00
-45.	400.	2500.	19.38	2535.	19.38	2535.	0.00	0.00	0.00
-45.	450.	1500.	5.65	8978.	5.65	8978.	0.00	0.00	0.00
-45.	450.	2500.	18.78	2988.	18.80	2988.	0.00	0.00	0.00
-45.	500.	1500.	5.88	9566.	5.88	9566.	0.00	0.00	0.00
-45.	500.	2500.	18.01	3446.	18.02	3446.	0.00	0.00	0.00
-45.	550.	1500.	18.08	10066.	18.08	10066.	0.00	0.00	0.00
-45.	550.	2500.	16.39	3909.	16.39	3909.	0.00	0.00	0.00
-45.	600.	1500.	17.86	10472.	17.89	10472.	0.00	0.00	0.00
-45.	600.	2500.	16.82	4751.	16.82	4751.	0.00	0.00	0.00
-45.		1500.	16.82	10794.	16.90	10794.	0.00	0.00	0.00

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
-45.	650.	6000.	7.10	7.14	0.04	0.58	-0.02
-45.	650.	15000.	16.39	16.45	0.06	0.39	-0.01
-60.	300.	4000.	17.31	17.29	0.01	0.15	-0.01
-60.	300.	15000.	20.31	20.31	0.00	0.00	0.00
-60.	350.	4000.	16.56	16.56	0.00	0.10	0.00
-60.	350.	15000.	19.03	19.05	0.02	0.11	0.00
-60.	400.	5000.	17.23	17.25	0.01	0.19	-0.01
-60.	450.	15000.	17.91	17.92	0.01	0.10	0.00
-60.	450.	5000.	16.74	16.76	0.02	0.21	-0.00
-60.	500.	15000.	16.87	16.92	0.05	0.34	-0.03
-60.	500.	5000.	16.05	16.09	0.04	0.33	-0.01
-60.	550.	7000.	17.71	17.75	0.04	0.49	-0.03
-60.	550.	15000.	15.39	15.41	0.02	0.17	0.01
-60.	600.	8500.	18.78	18.79	0.01	0.06	0.01
-60.	600.	15000.	14.86	14.87	0.01	0.22	0.01
-60.	650.	9500.	19.34	19.36	0.02	0.01	0.01
-60.	650.	15000.	14.35	14.36	0.00	0.01	0.01

WEAPON COEFFICIENTS FOR IDNO 10

CFORM1 = 1.4531993 DKG1 = 0.0 DM1 = 0.0 VMUZ = 0.0 DS = 0.0
 CFORM2 = 0.0 DKG2 = 0.0 DM2 = 0.0 FN = 0.0 SL = 0.0
 I TYPE = -1 IREF = 1 VE = 0.0
 IBOOTH = 1 DMAX = 5.00 DTI = 3.00

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR
10.	300.	500.	8.93	4401.	0.00	0.01	0.00
10.	300.	3000.	16.72	8163.	0.01	0.06	-0.01
10.	350.	500.	19.59	5499.	0.00	0.04	-0.01
10.	350.	3000.	17.28	9800.	0.00	0.00	-0.03
10.	400.	500.	10.28	6710.	0.01	0.06	-0.00
10.	400.	3000.	17.86	11519.	0.00	0.01	-0.07
10.	450.	500.	10.98	18036.	0.00	0.02	-0.00
10.	450.	3000.	18.44	13327.	0.00	0.01	-0.00
10.	500.	500.	11.71	94203.	0.00	0.04	-0.01
10.	500.	3000.	19.03	15203.	0.01	0.03	-0.00
10.	550.	500.	12.44	11031.	0.00	0.07	-0.01
10.	550.	3000.	19.62	17165.	0.01	0.00	-0.02
10.	600.	500.	13.15	12608.	0.01	0.13	-0.00
10.	600.	3000.	20.24	19036.	0.00	0.04	-0.06
10.	650.	500.	13.80	14036.	0.00	0.01	-0.00
10.	650.	3000.	20.81	20675.	0.00	0.04	-0.01
0.	300.	15000.	30.69	4843.	0.01	0.01	-0.06
0.	350.	15000.	37.90	15122.	0.01	0.05	-0.07
0.	350.	15000.	31.03	17592.	0.01	0.06	-0.01
0.	400.	15000.	31.90	52644.	0.02	0.06	-0.08
0.	450.	15000.	31.90	20044.	0.01	0.04	-0.01
0.	450.	15000.	31.90	59144.	0.03	0.08	-0.09
0.	500.	15000.	31.90	22472.	0.01	0.16	-0.01
0.	500.	15000.	31.35	65655.	0.03	0.17	-0.10
0.	550.	15000.	31.91	24858.	0.04	0.14	-0.02
0.	550.	15000.	31.58	27077.	0.02	0.22	-0.13
0.	600.	15000.	31.91	7817.	0.06	0.18	-0.02
0.	600.	15000.	31.86	28923.	-17.	0.1	-0.02

DEG	TAS	ALT	PLM NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
0	650	500	5:59	5929	5:59	5928	0:00	0:03	-0:00
-10	650	1500	32:21	30443	32:20	30444	-0:00	0:00	-0:00
-10	300	3500	5:63	2785	5:63	2785	0:00	0:00	0:00
-10	350	1000	12:36	6060	12:36	6060	0:00	0:00	0:00
-10	350	5000	15:33	3077	15:34	3077	0:00	0:00	0:00
-10	400	1000	14:88	8459	14:88	8459	0:00	0:00	0:00
-10	400	6500	15:06	3334	15:06	3334	0:00	0:00	0:00
-10	450	1000	16:99	10985	17:01	10984	0:02	0:11	-0:01
-10	450	8000	18:87	3561	18:88	3561	0:00	0:00	0:00
-10	500	1000	4:57	13634	4:57	13634	0:00	0:00	0:00
-10	500	1000	20:59	3760	20:59	3760	0:00	0:00	0:00
-10	550	1500	22:91	16396	22:92	16396	0:00	0:00	0:00
-10	550	11500	22:87	5327	22:92	5328	0:04	0:19	0:02
-10	600	1500	25:64	19681	25:66	19683	0:00	0:04	-0:01
-10	650	1500	25:51	5562	25:66	5563	0:00	0:08	0:00
-10	650	14500	24:40	2301	24:51	2301	0:00	0:00	0:00
-20	300	1500	26:70	5749	26:40	5751	0:00	0:00	0:00
-20	350	1500	5:02	2689	5:70	2689	0:00	0:00	0:00
-20	350	1500	14:26	6540	14:02	6540	0:00	0:00	0:00
-20	400	1500	16:48	2897	16:43	2898	0:00	0:00	0:00
-20	400	1500	19:08	8890	19:48	8889	0:01	0:07	-0:01
-20	450	1000	4:88	3068	4:88	3068	0:00	0:06	0:00
-20	450	1500	17:30	11730	19:10	11730	0:01	0:00	0:00
-20	500	12000	32:09	3209	4:54	3209	0:00	0:00	0:00
-20	500	1500	14:13	14313	20:38	14313	0:00	0:00	0:00
-20	550	1500	23:66	17708	23:66	17708	0:00	0:00	0:00
-20	550	1500	23:06	4362	23:06	4362	0:00	0:00	0:00
-20	600	1500	23:27	18804	23:06	18805	0:00	0:00	0:00
-20	600	1500	24:79	4480	23:28	4480	0:00	0:00	0:00
-20	650	1500	22:93	19710	22:99	19705	0:06	0:28	0:02
-20	650	1500	24:56	4569	24:56	4570	0:00	0:01	0:00
-30	300	2000	22:81	20479	22:81	20476	0:00	0:23	0:02
-30	350	2000	25:68	2526	25:81	2526	0:00	0:00	0:00
-30	350	9000	17:29	7402	17:29	7402	0:00	0:00	0:00
-30	400	12000	19:85	2684	19:29	2685	0:00	0:01	0:00
-30	400	1500	22:28	9915	24:85	9915	0:02	0:10	0:01
-30				2809	22:31	2809	0:00	0:11	0:01
-30				12550		12549	0:00		

DEG	TAS	ALT	PLM NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME	DIFFERENCES DIST	PER CENT TIME	PER CENT DIST	ERROR DIST
-30.	450.	2500.	5:40	3517.	5:41	3517.	0:00	1:0.	0:07	0:00	0:00
-30.	450.	15000.	21:52	13547.	21:53	13547.	0:02	0:0.	0:01	0:00	0:00
-30.	500.	15000.	5:08	14434.	5:08	14434.	0:01	0:0.	0:03	0:00	0:00
-30.	550.	15000.	20:31	15184.	20:31	15184.	0:00	0:0.	0:01	0:00	0:00
-30.	600.	30000.	20:17	14452.	20:17	14452.	0:00	1:1.	0:01	0:00	0:00
-30.	650.	15000.	19:51	15801.	19:51	15801.	0:06	-3:1.	0:32	0:02	0:02
-30.	650.	15000.	19:45	15179.	19:46	15179.	0:05	-2:0.	0:26	0:01	0:01
-40.	300.	15000.	19:47	16334.	19:47	16334.	0:00	1:0.	0:20	0:01	0:01
-40.	350.	14000.	21:40	22297.	21:40	22297.	0:01	1:0.	0:01	0:01	0:01
-40.	350.	15000.	21:36	8074.	21:37	8074.	0:00	1:0.	0:01	0:01	0:01
-40.	400.	15000.	21:35	9354.	21:35	9354.	0:01	1:0.	0:04	0:01	0:01
-40.	400.	15000.	20:36	2943.	20:37	2943.	0:00	1:1.	0:03	0:01	0:01
-40.	450.	15000.	19:44	10151.	19:45	10151.	0:00	1:1.	0:01	0:01	0:01
-40.	450.	15000.	18:58	3041.	18:59	3041.	0:04	-1:0.	0:12	0:02	0:02
-40.	500.	15000.	18:56	10866.	18:57	10866.	0:02	1:0.	0:19	0:01	0:01
-40.	550.	15000.	18:04	11410.	18:05	11410.	0:01	0:0.	0:15	0:01	0:01
-40.	600.	15000.	17:52	11987.	17:53	11987.	0:01	1:1.	0:12	0:01	0:01
-40.	650.	15000.	16:53	12400.	16:54	12400.	0:00	1:0.	0:23	0:01	0:01
-45.	300.	15000.	16:49	12768.	16:50	12768.	0:08	-0:4.	0:45	0:03	0:03
-45.	350.	15000.	15:61	1994.	15:61	1994.	0:01	1:0.	0:05	0:01	0:01
-45.	400.	15000.	21:50	7561.	21:50	7561.	0:00	1:0.	0:03	0:01	0:01
-45.	450.	15000.	20:31	2441.	20:31	2441.	0:00	2:0.	0:01	0:02	0:02
-45.	500.	15000.	19:53	2537.	19:53	2537.	0:03	1:1.	0:01	0:02	0:02
-45.	550.	15000.	18:62	2990.	18:62	2990.	0:02	1:1.	0:09	0:04	0:04
-45.	600.	15000.	17:85	9608.	17:85	9608.	0:01	1:1.	0:04	0:03	0:03
-45.	650.	15000.	17:05	3450.	17:05	3450.	0:00	1:1.	0:08	0:01	0:01
-45.	650.	15000.	17:15	10113.	17:15	10113.	0:00	1:2.	0:01	0:02	0:02
-45.	650.	15000.	16:82	10530.	16:83	10530.	0:02	1:0.	0:24	0:01	0:01
-45.	650.	15000.	16:59	10759.	16:59	10759.	0:06	-1:1.	0:34	0:01	0:01
-45.	650.	15000.	16:59	10872.	16:59	10872.	0:06	-1:1.	0:34	0:01	0:01

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
-45.	650.	6000.	7.02	7.05	0.03	0.44	-0.01
-45.	650.	15000.	16.26	16.04	0.04	0.24	0.00
-60.	300.	15000.	20.17	20.27	0.01	0.11	0.00
-60.	350.	15000.	16.54	16.54	-0.00	-0.00	0.00
-60.	350.	15000.	18.89	18.91	0.02	0.08	0.00
-60.	400.	15000.	17.21	17.22	0.01	0.14	0.00
-60.	450.	15000.	17.77	17.77	0.00	0.02	0.00
-60.	450.	15000.	17.19	17.20	0.01	0.12	0.01
-60.	500.	15000.	16.73	16.77	0.04	0.26	0.02
-60.	500.	15000.	17.88	17.72	-0.16	0.17	0.00
-60.	550.	15000.	15.70	15.91	0.21	0.38	0.01
-60.	550.	15000.	17.18	17.70	0.52	0.77	0.01
-60.	600.	15000.	18.69	18.19	-0.50	0.42	0.01
-60.	600.	15000.	14.57	14.58	0.01	0.02	0.01
-60.	650.	15000.	19.18	19.58	0.40	0.14	0.01
-60.	650.	15000.	13.90	13.98	0.08	0.56	0.03

WEAPON COEFFICIENTS FOR IDNO 11

CFORM1 = 1.3430996
CFORM2 = 0.0

DKG1 = 0.0
DKG2 = 0.0

DM1 = 0.0
DM2 = 0.0

VMUZ =
FN =

DS = 0.0
SL = 0.0

I TYPE = -1
IBOTH = 1

IREF = 1
DMAX = 5.00

VE = 0.0
DTI = 1.00

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	DIST	PER CENT TIME	ERROR DIST
10.	300.	500.	8.93	4406.	0.00	1.	0.03	0.02
10.	300.	3000.	16.72	8177.	0.01	0.	0.08	0.01
10.	350.	500.	19.60	5508.	0.01	1.	0.05	0.01
10.	350.	3000.	17.28	9820.	0.00	1.	0.02	0.02
10.	400.	500.	10.28	6726.	0.01	0.	0.08	0.00
10.	400.	3000.	17.85	11548.	0.01	2.	0.03	0.02
10.	450.	500.	10.93	18061.	0.01	2.	0.12	0.03
10.	450.	3000.	18.48	13360.	0.01	-2.	0.04	0.02
10.	500.	500.	11.71	9505.	0.01	4.	0.05	0.04
10.	500.	3000.	19.02	15256.	0.01	3.	0.07	0.02
10.	550.	500.	12.44	11070.	0.01	4.	0.10	0.04
10.	550.	3000.	19.62	17236.	0.02	2.	0.11	0.02
10.	600.	500.	13.16	12669.	0.01	3.	0.14	0.03
10.	600.	3000.	20.23	19155.	0.01	7.	0.19	0.02
10.	650.	500.	13.81	14138.	0.03	2.	0.06	0.05
10.	650.	3000.	20.81	20813.	0.01	10.	0.05	0.01
0.	300.	15000.	30.69	4848.	0.00	-0.	0.06	0.00
0.	300.	15000.	30.94	15156.	0.02	-0.	0.05	0.00
0.	350.	15000.	30.99	15648.	0.01	-0.	0.07	0.00
0.	350.	15000.	30.70	17637.	0.02	-1.	0.06	0.01
0.	400.	15000.	30.97	6446.	0.01	-0.	0.09	0.01
0.	400.	15000.	31.05	20102.	0.03	-1.	0.15	0.05
0.	450.	15000.	31.90	22526.	0.01	-3.	0.17	0.01
0.	450.	15000.	31.14	6576.	0.04	-4.	0.14	0.06
0.	500.	15000.	31.90	24942.	0.01	-1.	0.17	0.00
0.	500.	15000.	31.28	7226.	0.04	-5.	0.18	0.06
0.	550.	15000.	31.90	27186.	0.05	-0.	0.20	0.00
0.	550.	15000.	31.51	7842.	0.02	-7.	0.24	0.08
0.	600.	15000.	31.91	29078.	0.06	-3.	0.20	0.01
0.	600.	15000.	31.78					

DEG	TAS	ALT	PLM NPS TIME	VERSION MODIFIED BOEING ALGORITHM DIST	FORTAN NPS TIME	VERSION MODIFIED BOEING ALGORITHM DIST	DIFFERENCES TIME DIST	PER CENT TIME	ERROR DIST
0.	650.	1000.	7.92	8395.	7.95	8384.	0.03	0.34	-0.12
0.	650.	1500.	32.11	30649.	32.13	30658.	0.01	0.09	-0.03
-10.	300.	1500.	13.36	3623.	13.37	3623.	0.01	0.09	-0.01
-10.	350.	1500.	17.01	6557.	17.01	6557.	0.01	0.08	-0.01
-10.	350.	1500.	14.87	4039.	14.87	4039.	0.00	0.03	-0.01
-10.	400.	1500.	16.97	8470.	16.99	8471.	0.02	0.12	-0.00
-10.	450.	1500.	16.42	4414.	16.43	4413.	0.00	0.07	-0.00
-10.	450.	1500.	18.84	11003.	18.86	11002.	0.01	0.07	0.01
-10.	500.	1500.	16.16	13660.	16.16	13661.	0.00	0.05	0.01
-10.	500.	1500.	21.20	15056.	21.21	15057.	0.01	0.07	0.02
-10.	550.	1000.	25.91	16927.	25.91	16929.	0.00	0.04	0.01
-10.	550.	1200.	23.48	5331.	23.49	5331.	0.01	0.06	0.02
-10.	600.	1500.	25.68	20212.	25.69	20216.	0.00	0.04	0.01
-10.	600.	1400.	25.70	5567.	25.70	5568.	0.00	0.24	0.01
-10.	650.	1500.	25.55	23334.	25.56	23335.	0.00	0.07	0.01
-10.	650.	1500.	26.81	5761.	26.81	5764.	0.00	0.04	0.01
-20.	300.	1500.	5.89	25364.	5.89	25374.	0.02	0.07	0.04
-20.	300.	1500.	14.81	2690.	14.81	2690.	0.00	0.03	0.01
-20.	350.	1500.	17.26	6916.	17.26	6917.	0.00	0.03	0.01
-20.	350.	1500.	19.03	2899.	19.03	2899.	0.00	0.03	0.01
-20.	400.	1000.	16.12	9269.	16.12	9270.	0.00	0.04	0.01
-20.	400.	2000.	19.73	3844.	19.73	3844.	0.00	0.03	0.01
-20.	450.	1000.	15.73	1748.	15.73	1749.	0.01	0.03	0.01
-20.	450.	12500.	21.38	14711.	21.39	14712.	0.00	0.03	0.01
-20.	500.	1500.	25.38	17745.	25.38	17747.	0.00	0.02	0.01
-20.	550.	1500.	25.06	14363.	25.06	14364.	0.00	0.06	0.01
-20.	550.	1500.	23.20	18854.	23.21	18858.	0.01	0.05	0.02
-20.	600.	1500.	24.83	14482.	24.83	14482.	0.00	0.10	0.01
-20.	600.	1500.	22.78	19779.	22.79	19780.	0.00	0.03	0.01
-20.	650.	1500.	24.55	14574.	24.55	14574.	0.00	0.03	0.01
-20.	650.	1500.	22.80	20578.	22.80	20583.	0.00	0.20	0.02
-30.	300.	9000.	17.29	7409.	17.29	7410.	0.00	0.03	0.01
-30.	350.	12000.	19.93	9928.	19.93	9928.	0.00	0.01	0.01
-30.	400.	12500.	5.84	3382.	5.84	3382.	0.00	0.12	0.02
-30.	400.	15000.	22.24	12568.	22.27	12568.	0.03	0.15	0.00

DEG	TAS	ALT	PLM NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME DIST	PER CENT TIME	ERROR DIST
-30.	450.	2500.	5.40	3518.	5.40	3518.	0.00	0.1	0.01
-30.	450.	1500.	21.49	13568.	21.49	13568.	0.02	0.1	0.01
-30.	500.	2500.	5.01	3629.	5.02	3629.	0.00	0.1	0.01
-30.	500.	1500.	5.79	14458.	20.81	14460.	0.02	0.08	0.01
-30.	550.	3000.	20.49	15216.	20.49	15219.	0.00	0.02	0.01
-30.	550.	1500.	20.23	15216.	20.25	15219.	0.01	0.02	0.02
-30.	600.	3000.	5.16	44553.	19.78	44547.	0.00	0.02	0.01
-30.	600.	1500.	5.71	15846.	19.63	15844.	0.07	0.34	0.01
-30.	650.	3500.	5.63	5184.	19.34	5180.	0.00	0.06	0.01
-30.	650.	1500.	19.28	16397.	22.97	16400.	0.05	0.28	0.02
-40.	300.	2500.	5.97	22998.	22.42	22998.	0.00	0.10	0.00
-40.	300.	1500.	5.40	8457.	22.39	8457.	0.02	0.10	0.01
-40.	350.	2500.	22.39	24222.	21.33	24222.	0.00	0.02	0.01
-40.	350.	1500.	21.33	9366.	21.33	9367.	0.00	0.07	0.02
-40.	400.	3000.	5.32	2944.	20.75	2944.	0.02	0.03	0.01
-40.	400.	1500.	20.75	10170.	20.33	10172.	0.01	0.06	0.02
-40.	450.	2500.	5.32	3041.	19.28	3042.	0.00	0.02	0.02
-40.	450.	1500.	19.28	10880.	19.59	10880.	0.04	0.02	0.02
-40.	500.	3500.	5.59	3573.	18.86	3574.	0.00	0.23	0.00
-40.	500.	1500.	18.86	11493.	17.99	11495.	0.03	0.16	0.02
-40.	550.	4500.	5.62	4111.	17.86	4112.	0.00	0.12	0.01
-40.	550.	1500.	17.86	12007.	17.43	12009.	0.02	0.11	0.02
-40.	600.	4500.	6.12	4629.	17.40	4632.	0.01	0.17	0.03
-40.	600.	1500.	17.42	12429.	16.89	12434.	0.01	0.22	0.01
-40.	650.	5000.	16.39	15184.	16.40	15187.	0.08	0.45	0.01
-40.	650.	1500.	16.40	12806.	15.61	12809.	0.00	0.27	0.02
-45.	300.	2500.	5.81	1994.	21.73	1995.	0.00	0.03	0.01
-45.	300.	1500.	21.72	7570.	20.58	7571.	0.02	0.03	0.02
-45.	350.	3500.	5.87	2442.	19.36	2442.	0.00	0.05	0.02
-45.	350.	1500.	20.57	8347.	19.53	8348.	0.01	0.19	0.02
-45.	400.	3000.	19.36	9028.	18.60	9029.	0.04	0.03	0.02
-45.	400.	1500.	19.53	2991.	18.85	2992.	0.00	0.14	0.02
-45.	450.	4500.	5.67	9619.	17.78	9620.	0.03	0.03	0.02
-45.	450.	1500.	18.55	3451.	17.05	3451.	0.00	0.09	0.01
-45.	500.	4500.	5.85	10126.	16.09	10128.	0.02	0.08	0.03
-45.	500.	1500.	17.76	13914.	16.82	13915.	0.00	0.26	0.01
-45.	550.	5500.	16.08	10547.	16.50	10550.	0.01	0.08	0.02
-45.	600.	1500.	16.45	4761.	16.50	4762.	0.06	0.26	0.02
-45.	600.	1500.	16.45	10894.	16.50	10896.	0.00	0.26	0.02

DEG	TAS	ALT	PLM NPS TIME	VERSION MODIFIED BOEING ALGORITHM DIST	FORTAN NPS TIME	VERSION MODIFIED BOEING ALGORITHM DIST	DIFFERENCES TIME DIST	PER CENT TIME	ERROR DIST
0.	650.	1000.	7.92	8419.	7.94	8405.	0.02	0.28	0.16
0.	650.	1500.	31.96	30853.	32.02	30846.	0.05	0.17	-0.02
-10.	300.	1500.	17.33	3625.	37.33	3625.	0.01	0.08	-0.01
-10.	300.	4000.	13.35	6563.	13.36	6562.	0.00	0.05	-0.01
-10.	350.	1500.	17.01	4041.	17.01	4041.	0.00	0.07	-0.01
-10.	350.	1500.	14.85	8479.	14.85	8480.	0.00	0.01	0.00
-10.	400.	1500.	16.96	4417.	16.97	4416.	0.00	0.06	-0.01
-10.	400.	6500.	16.42	11018.	16.43	11017.	0.01	0.08	-0.01
-10.	450.	1500.	18.82	14755.	18.82	14755.	0.00	0.06	-0.01
-10.	450.	8000.	16.15	13683.	16.16	13682.	0.01	0.04	-0.01
-10.	500.	1500.	21.16	15060.	21.17	15060.	0.00	0.05	0.00
-10.	500.	10000.	5.90	16961.	5.91	16961.	0.01	0.03	0.00
-10.	550.	1500.	23.68	53334.	23.68	53335.	0.00	0.04	0.01
-10.	550.	12000.	25.62	20264.	25.62	20264.	0.00	0.04	0.01
-10.	600.	1500.	25.69	55722.	25.69	55723.	0.00	0.04	0.01
-10.	600.	14000.	5.73	23422.	5.74	23419.	0.04	0.17	-0.01
-10.	650.	1500.	25.73	5769.	25.74	5770.	0.00	0.03	0.01
-20.	300.	1500.	5.79	25501.	5.79	25509.	0.00	0.02	0.01
-20.	300.	1500.	14.79	26991.	14.80	26991.	0.00	0.01	0.00
-20.	350.	6000.	15.26	69222.	15.26	69222.	0.00	0.01	0.00
-20.	350.	1500.	17.08	28999.	17.08	29000.	0.00	0.01	0.00
-20.	400.	2000.	16.11	3846.	16.12	3846.	0.00	0.04	0.01
-20.	400.	10000.	19.03	11764.	19.03	11763.	0.01	0.05	-0.01
-20.	450.	20000.	15.73	14048.	15.73	14049.	0.00	0.02	0.01
-20.	500.	12500.	21.37	14734.	21.37	14734.	0.00	0.04	0.01
-20.	500.	20000.	23.53	17779.	23.53	17780.	0.00	0.01	0.00
-20.	550.	15000.	23.06	43365.	23.06	43366.	0.00	0.01	0.01
-20.	550.	15000.	23.12	18898.	23.12	18899.	0.00	0.01	0.00
-20.	600.	15000.	22.74	19843.	22.74	19845.	0.00	0.01	0.00
-20.	650.	20000.	22.54	4578.	22.54	4578.	0.00	0.02	0.00
-30.	300.	15000.	22.44	20672.	22.44	20670.	0.04	0.03	-0.02
-30.	300.	20000.	25.80	7417.	25.80	7417.	0.00	0.02	0.01
-30.	350.	9000.	17.25	2528.	17.25	2528.	0.00	0.02	0.01
-30.	350.	20000.	15.29	2686.	15.29	2686.	0.00	0.01	0.01
-30.	400.	12500.	19.83	9940.	19.83	9939.	0.02	0.08	0.01
-30.	400.	15000.	22.20	3383.	22.22	3383.	0.02	0.09	-0.01
-30.				12585.		12585.			

TAS	ALT	PLM NPS TIME	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS TIME	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME DIST	PER CENT TIME ERROR DIST
2500.	2500.	5.40	3519.	5.40	3519.	0.00	0.01
1500.	1500.	21.43	13587.	21.43	13587.	0.01	0.00
1500.	1500.	5.01	13630.	5.01	13630.	0.00	0.00
1500.	1500.	20.74	14481.	20.74	14481.	0.00	0.00
1500.	1500.	5.48	43360.	5.48	43360.	0.00	0.01
1500.	1500.	20.16	15246.	20.16	15246.	0.00	0.01
1500.	1500.	5.16	44555.	5.16	44555.	0.00	0.01
1500.	1500.	19.62	15887.	19.62	15887.	0.05	0.01
1500.	1500.	5.62	15187.	5.62	15187.	0.00	0.01
1500.	1500.	19.20	16454.	19.20	16454.	0.04	0.00
1500.	1500.	5.97	22999.	5.97	22999.	0.00	0.00
1500.	1500.	22.38	84666.	22.38	84666.	0.01	0.00
1500.	1500.	5.39	24223.	5.39	24223.	0.00	0.02
1500.	1500.	21.29	93777.	21.29	93777.	0.01	0.01
1500.	1500.	5.74	29444.	5.74	29444.	0.00	0.01
1500.	1500.	20.27	10183.	20.27	10183.	0.00	0.01
1500.	1500.	5.35	30443.	5.35	30443.	0.00	0.02
1500.	1500.	19.38	10892.	19.38	10892.	0.03	0.00
1500.	1500.	5.59	35755.	5.59	35755.	0.00	0.01
1500.	1500.	18.85	11508.	18.85	11508.	0.02	0.01
1500.	1500.	17.91	41113.	17.91	41113.	0.01	0.01
1500.	1500.	6.11	12027.	6.11	12027.	0.01	0.01
1500.	1500.	17.33	46552.	17.33	46552.	0.01	0.01
1500.	1500.	16.39	124556.	16.39	124556.	0.00	0.01
1500.	1500.	16.76	15188.	16.76	15188.	0.06	0.01
1500.	1500.	5.61	12839.	5.61	12839.	0.00	0.02
1500.	1500.	21.69	19955.	21.69	19955.	0.01	0.01
1500.	1500.	5.89	75799.	5.89	75799.	0.01	0.01
1500.	1500.	20.54	24443.	20.54	24443.	0.00	0.03
1500.	1500.	5.36	83559.	5.36	83559.	0.00	0.02
1500.	1500.	19.49	90338.	19.49	90338.	0.02	0.00
1500.	1500.	5.62	29939.	5.62	29939.	0.00	0.02
1500.	1500.	18.54	96330.	18.54	96330.	0.01	0.00
1500.	1500.	5.84	34532.	5.84	34532.	0.00	0.01
1500.	1500.	17.72	10138.	17.72	10138.	0.00	0.02
1500.	1500.	6.04	39136.	6.04	39136.	0.00	0.01
1500.	1500.	17.01	10563.	17.01	10563.	0.06	0.02
1500.	1500.	16.81	47645.	16.81	47645.	0.02	0.00
1500.	1500.	16.41	10915.	16.41	10915.	0.04	0.00

DEG	TAS	ALT	PLM NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
-45.	650.	6000.	6.97	5226.	7.00	5226.	0.03	0.37	0.01
-45.	650.	15000.	15.79	11226.	15.81	11227.	0.01	0.17	0.00
-60.	300.	4000.	20.25	1822.	20.11	1822.	0.01	0.09	0.01
-60.	350.	15000.	6.53	4974.	6.53	4974.	0.00	-0.06	0.00
-60.	350.	4000.	18.83	1914.	18.84	1914.	0.01	0.06	0.00
-60.	400.	15000.	17.20	5429.	17.21	5429.	0.01	0.11	0.00
-60.	400.	15000.	17.69	2407.	17.70	2407.	0.01	0.02	0.01
-60.	450.	15500.	16.18	5815.	16.19	5816.	0.01	0.12	0.01
-60.	450.	15000.	16.65	2698.	16.69	2698.	0.04	0.21	0.01
-60.	500.	15000.	17.79	6144.	17.82	6143.	0.02	0.13	0.00
-60.	500.	15000.	15.79	3206.	15.82	3206.	0.02	0.30	0.02
-60.	550.	15000.	15.65	6418.	15.68	6418.	0.02	0.06	0.01
-60.	550.	15000.	15.06	3501.	15.07	3500.	0.01	0.04	0.01
-60.	600.	18500.	8.64	6643.	8.64	6644.	0.00	0.10	0.00
-60.	600.	15000.	14.41	4229.	14.42	4230.	0.00	0.01	0.00
-60.	650.	19500.	19.10	6828.	19.11	6829.	0.01	0.41	0.00
-60.	650.	15000.	13.73	4740.	13.78	4740.	0.06	0.01	0.02
-60.	650.	15000.	13.73	6993.	13.78	6991.	0.06	0.01	0.02

WEAPON COEFFICIENTS FOR IDNO 13

CFORM1 = 1.0000000
 CFORM2 = 0.0
 ITYPE = -1
 IBOOTH = 1

DKG1 = 0.0
 DKG2 = 0.0
 IREF = 1
 DMAX = 5.00

DM1 = 0.0
 DM2 = 0.0
 VE = 0.0
 DTI = 3.00

VMUZ =
 FN =

DS = 0.0
 SL = 0.0

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTTRAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
10.	300.	1000.	11.08	5471.	0.00	0.00	0.00
10.	300.	3000.	16.70	8209.	0.01	0.04	-0.01
10.	350.	1000.	11.70	6722.	0.00	0.01	0.00
10.	350.	3000.	17.26	9869.	0.00	0.00	0.00
10.	400.	500.	10.28	6757.	0.00	0.04	-0.02
10.	400.	3000.	17.83	11616.	0.00	0.01	0.00
10.	450.	500.	10.99	8106.	0.01	0.06	-0.05
10.	450.	3000.	18.41	13452.	0.00	0.02	0.00
10.	500.	500.	11.72	9571.	0.00	0.01	0.00
10.	500.	3000.	19.00	15378.	0.01	0.03	-0.00
10.	550.	500.	12.46	11160.	0.00	0.02	0.00
10.	550.	3000.	19.60	17393.	0.01	0.05	-0.01
0.	300.	2000.	11.18	5605.	0.00	0.00	0.00
0.	300.	15000.	30.84	15233.	0.01	0.02	-0.00
0.	350.	15000.	11.19	6532.	0.00	0.00	0.00
0.	400.	15000.	30.88	17737.	0.01	0.03	-0.01
0.	450.	15000.	9.69	6464.	0.00	0.03	0.00
0.	450.	15000.	30.93	20230.	0.00	0.04	-0.01
0.	450.	15000.	9.69	27265.	0.00	0.04	0.00
0.	500.	15000.	31.01	22703.	0.02	0.05	-0.01
0.	500.	15000.	9.69	8063.	0.00	0.07	0.00
0.	550.	15000.	31.13	25137.	0.02	0.04	-0.01
0.	550.	15000.	9.70	8861.	0.00	0.09	0.00
0.	550.	15000.	31.32	27441.	0.03	0.06	-0.01
-10.	300.	4000.	13.32	3628.	0.00	0.04	0.00
-10.	350.	15000.	17.34	4045.	0.01	0.06	-0.00
-10.	350.	15000.	14.83	8495.	0.00	0.01	0.00
-10.	400.	15000.	16.70	4420.	0.00	0.05	-0.00
-10.	400.	6500.	16.93	11043.	0.01	0.07	-0.01

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
-10.	450.	1500.	6:42	4759.	0:00	0:05	0:00
-10.	450.	8000.	18:78	13719.	0:01	0:03	0:00
-10.	500.	1500.	6:15	5064.	0:00	0:04	0:00
-10.	500.	10000.	21:10	17014.	0:00	0:02	0:00
-10.	550.	1500.	5:32	5340.	0:00	0:03	0:01
-10.	550.	12000.	23:02	20347.	0:00	0:00	0:00
-20.	300.	2000.	7:02	3321.	0:00	0:06	0:00
-20.	300.	6000.	14:77	6932.	0:00	0:01	0:00
-20.	350.	2000.	16:54	3607.	0:00	0:05	0:00
-20.	350.	8000.	17:05	9296.	0:00	0:00	0:00
-20.	400.	2000.	6:11	3848.	0:00	0:03	0:01
-20.	400.	10000.	18:98	11789.	0:01	0:04	0:00
-20.	450.	2000.	5:27	4051.	0:00	0:02	0:01
-20.	450.	12500.	21:72	14771.	0:01	0:03	0:01
-20.	500.	2500.	6:42	5048.	0:00	0:06	0:01
-20.	500.	15000.	23:43	17834.	0:00	0:00	0:00
-20.	550.	2500.	6:07	5244.	0:00	0:04	0:00
-20.	550.	15000.	22:90	18977.	0:05	0:01	0:02
-30.	300.	2500.	6:21	3007.	0:00	0:06	0:00
-30.	300.	9000.	17:33	7427.	0:00	0:00	0:01
-30.	350.	2500.	6:21	3216.	0:00	0:04	0:01
-30.	350.	12500.	19:83	9958.	0:01	0:07	0:00
-30.	400.	2500.	5:83	3385.	0:00	0:02	0:00
-30.	400.	15000.	22:15	12612.	0:02	0:08	0:01
-30.	450.	3000.	6:28	14099.	0:00	0:04	0:01
-30.	450.	15000.	21:35	13618.	0:01	0:03	0:01
-30.	500.	3000.	5:85	14516.	0:00	0:01	0:00
-30.	500.	15000.	20:65	43662.	0:00	0:02	0:01
-30.	550.	3000.	5:47	15296.	0:05	0:25	0:02
-30.	550.	15000.	19:99	2299.	0:00	0:04	0:01
-40.	300.	2500.	5:96	2299.	0:01	0:03	0:01
-40.	300.	14500.	21:27	8296.	0:00	0:04	0:01
-40.	350.	3000.	6:22	2822.	0:01	0:03	0:01
-40.	350.	15000.	21:23	9394.	0:00	0:02	0:01
-40.	400.	3000.	5:22	2946.	0:00	0:01	0:01
-40.	400.	15000.	20:31	10201.	0:00	0:04	0:01
-40.	450.	3500.	6:02	3477.	0:00	0:01	0:00
-40.	450.	15000.	19:58	10912.	0:02	0:12	0:02
-40.	500.	3500.	5:58	3575.	0:01	0:02	0:00
-40.	500.	15000.	18:49	11531.	0:01	0:07	0:02

WEAPON COEFFICIENTS FOR IDNO 14

CFORM1 = 3.1199999 DKG1 = -.0012230 DM1 = 0.0 DS = 0.0
 CFORM2 = 0.0 DKG2 = 0.0 DM2 = 0.0 SL = 0.0
 ITYPE = -1 IREF = 1 VE = 0.0
 IBOTH = 1 DMAX = 5.00 DTI = 3.00

VMUZ = 0.0
 FN = 0.0

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT ERROR TIME	ERROR DIST
10.	300.	500.	8.93	4369.	0.00	0.00	0.00
10.	300.	3000.	16.76	8082.	0.02	0.09	-0.02
10.	350.	500.	19.59	5448.	0.00	0.05	-0.01
10.	350.	3000.	17.33	9683.	0.00	0.00	-0.00
10.	400.	500.	10.26	6636.	0.01	0.09	-0.05
10.	400.	3000.	17.90	11355.	0.00	0.02	-0.10
10.	450.	500.	10.95	17932.	0.02	0.15	-0.00
10.	450.	3000.	18.48	13099.	0.01	0.04	-0.00
10.	500.	500.	11.68	9319.	0.00	0.07	-0.01
10.	500.	3000.	19.07	14917.	0.01	0.05	-0.01
10.	550.	500.	12.40	10817.	0.02	0.11	-0.02
10.	550.	3000.	19.66	16788.	0.01	0.06	-0.01
0.	300.	1500.	31.71	14817.	0.02	0.07	-0.01
0.	300.	1500.	31.24	14934.	0.01	0.07	-0.01
0.	350.	1500.	31.30	5606.	0.03	0.08	-0.01
0.	400.	1500.	31.91	17349.	0.02	0.20	-0.02
0.	450.	1500.	31.39	19738.	0.03	0.11	-0.03
0.	450.	1500.	31.91	5880.	0.02	0.22	-0.12
0.	500.	1500.	31.51	22093.	0.04	0.14	-0.02
0.	500.	1500.	31.92	6520.	0.02	0.24	-0.02
0.	550.	1500.	31.70	24392.	0.06	0.18	-0.02
0.	550.	1500.	31.92	7157.	0.07	0.23	-0.03
0.	550.	1500.	31.99	26474.	0.07	0.23	-0.03
0.	300.	1000.	15.64	2777.	0.00	0.10	-0.02
0.	350.	4000.	13.43	6511.	0.01	0.02	-0.01
0.	350.	1000.	15.35	3068.	0.00	0.02	-0.00
0.	400.	1000.	14.97	8398.	0.00	0.01	-0.00
0.	400.	6500.	15.07	3324.	0.00	0.01	-0.00
0.	400.	6500.	17.14	10885.	0.00	0.00	-0.00

DEG	TAS	ALT	PLM NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME	DIST	PER CENT TIME	ERROR DIST
-10.	450.	1500.	6.45	4731.	6.46	4731.	0.01	-0.	0.08	0.01
-10.	450.	1800.	19.04	13490.	19.05	13489.	0.02	-1.	0.08	0.01
-10.	450.	1500.	16.19	15033.	16.19	15033.	0.00	-0.	0.00	0.00
-10.	550.	1500.	20.81	16197.	20.81	16197.	0.00	-0.	0.07	0.00
-10.	550.	11500.	25.94	15306.	25.94	15306.	0.00	-0.	0.00	0.00
-10.	550.	11500.	23.25	19364.	23.25	19364.	0.00	-0.	0.03	0.00
-20.	300.	6000.	14.91	26870.	14.92	26870.	0.00	-0.	0.02	0.00
-20.	300.	1500.	15.28	2891.	15.28	2891.	0.00	-0.	0.01	0.00
-20.	350.	1500.	16.54	8830.	16.56	8828.	0.02	-1.	0.12	0.01
-20.	400.	1500.	14.89	3062.	14.89	3062.	0.00	-0.	0.10	0.00
-20.	450.	10000.	19.26	11631.	19.28	11630.	0.02	-1.	0.01	0.01
-20.	450.	12500.	21.67	14035.	21.68	14035.	0.00	-0.	0.08	0.01
-20.	500.	12500.	25.41	14539.	25.41	14538.	0.00	-0.	0.02	0.01
-20.	500.	15000.	24.09	174206.	24.06	174206.	0.00	-0.	0.05	0.01
-20.	550.	15000.	25.77	14351.	25.77	14351.	0.00	-0.	0.03	0.00
-20.	550.	15000.	23.82	18497.	23.82	18497.	0.00	-0.	0.04	0.01
-30.	300.	9000.	17.43	2522.	17.43	2522.	0.00	-0.	0.01	0.00
-30.	350.	2000.	20.18	7358.	20.17	7358.	0.00	-0.	0.01	0.00
-30.	350.	12000.	24.86	9841.	24.86	9841.	0.00	-0.	0.00	0.00
-30.	400.	12000.	22.54	2804.	22.54	2804.	0.00	-0.	0.00	0.00
-30.	450.	15000.	21.04	13511.	21.04	13511.	0.00	-0.	0.01	0.01
-30.	450.	15000.	25.82	13425.	25.85	13424.	0.03	-1.	0.13	0.00
-30.	500.	15000.	21.23	3621.	21.24	3621.	0.00	-0.	0.02	0.00
-30.	550.	15000.	21.70	14287.	21.70	14287.	0.00	-0.	0.02	0.00
-40.	300.	15000.	20.79	14978.	20.80	14978.	0.01	-0.	0.05	0.01
-40.	350.	15000.	25.99	2294.	25.99	2294.	0.00	-0.	0.05	0.00
-40.	350.	15000.	22.15	8203.	22.17	8203.	0.02	-0.	0.02	0.00
-40.	400.	15000.	21.59	2938.	21.61	2939.	0.00	-0.	0.07	0.00
-40.	450.	15000.	20.62	10084.	20.63	10085.	0.00	-0.	0.04	0.02
-40.	450.	15000.	19.71	3036.	19.71	3037.	0.00	-0.	0.03	0.01
-40.	500.	15000.	19.62	10787.	19.62	10785.	0.06	-2.	0.04	0.02
-40.	500.	15000.	19.02	3567.	19.06	3567.	0.04	-1.	0.22	0.01
-40.	500.	15000.	19.02	11382.	19.06	11381.	0.04	-1.	0.22	0.01

WEAPON COEFFICIENTS FOR IDNO 15

CFORM1 = 3.4571991
CFORM2 = 0.0

DKG1 = 0.0
DKG2 = 0.0
IREF = 1
DMAX = 3.00

DM1 = 0.0
DM2 = 0.0
VE = 0.0
DTI = 2.00

VMUZ = 0.0
FN = 0.0

DS = 0.0
SL = 0.0

ITYPE = -1
IBOTH = 1

PLM VERSION
NPS MODIFIED
BOEING ALGORITHM
TIME

FORTRAM VERSION
NPS MODIFIED
BOEING ALGORITHM
TIME

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTRAM VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
10.	300.	500.	8.93	8.94	0.01	0.09	-0.04
10.	300.	3000.	16.83	16.60	0.00	0.00	-0.01
10.	350.	500.	19.60	19.41	0.00	0.02	-0.00
10.	350.	3000.	17.47	17.28	0.00	0.00	-0.01
10.	400.	500.	10.98	10.77	0.01	0.05	-0.00
10.	400.	3000.	17.96	17.70	0.00	0.02	-0.00
10.	450.	500.	10.56	10.35	0.01	0.06	-0.04
10.	450.	3000.	18.67	18.46	0.00	0.02	-0.00
10.	500.	500.	11.16	10.95	0.00	0.00	-0.00
10.	500.	3000.	19.16	18.95	0.01	0.07	-0.01
10.	550.	500.	12.38	12.17	0.00	0.01	-0.00
10.	550.	3000.	19.75	19.54	0.00	0.03	-0.01
10.	300.	1000.	17.94	17.73	0.00	0.00	-0.01
0.	300.	15000.	31.61	31.40	0.00	0.04	-0.01
0.	350.	15000.	31.95	31.74	0.00	0.01	-0.01
0.	350.	15000.	31.70	31.49	0.00	0.04	-0.01
0.	400.	15000.	31.96	31.75	0.00	0.01	-0.01
0.	400.	15000.	31.80	31.59	0.00	0.04	-0.01
0.	450.	15000.	31.97	31.76	0.00	0.05	-0.01
0.	450.	15000.	31.80	31.59	0.00	0.02	-0.01
0.	500.	15000.	31.98	31.77	0.01	0.06	-0.01
0.	500.	15000.	31.99	31.78	0.00	0.03	-0.01
0.	550.	15000.	32.09	31.88	0.01	0.05	-0.01
0.	550.	15000.	32.34	32.13	0.02	0.03	-0.01
0.	300.	15000.	32.66	32.45	0.00	0.00	-0.01
0.	300.	3500.	12.37	12.16	0.01	0.00	-0.01
-10.	300.	15000.	15.37	15.16	0.00	0.02	-0.01
-10.	350.	15000.	15.10	14.89	0.00	0.00	-0.01
-10.	350.	15000.	15.10	14.89	0.00	0.00	-0.01
-10.	400.	6000.	16.50	16.29	0.01	0.07	-0.00

DEG	TAS	ALT	PLM NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME DIST	PER CENT TIME	ERROR DIST
-10.	450.	1000.	4.84	3548.	4.85	3546.	0.01	0.29	0.06
-10.	450.	7500.	18.54	12821.	18.55	12821.	0.01	0.07	0.00
-10.	500.	1000.	20.61	3747.	20.62	3746.	0.01	0.26	0.00
-10.	500.	1000.	20.39	15458.	20.40	15458.	0.01	0.06	0.00
-10.	550.	1000.	22.85	3923.	22.88	3922.	0.03	0.23	0.03
-10.	550.	11500.	22.74	18597.	22.74	18595.	0.02	0.12	0.01
-20.	300.	5500.	14.21	2680.	14.22	2680.	0.01	0.04	0.00
-20.	350.	1500.	15.31	6461.	15.31	6461.	0.00	0.04	0.01
-20.	350.	1500.	15.72	2888.	15.73	2888.	0.01	0.08	0.01
-20.	350.	1500.	16.91	8750.	16.93	8749.	0.02	0.29	0.05
-20.	400.	9500.	18.88	3061.	18.89	3060.	0.01	0.09	0.01
-20.	450.	1500.	20.91	11141.	20.91	11140.	0.01	0.25	0.02
-20.	450.	1500.	20.79	3629.	20.81	3628.	0.02	0.10	0.01
-20.	500.	11500.	23.25	13629.	23.25	13629.	0.00	0.20	0.00
-20.	500.	14000.	23.17	3319.	23.18	3319.	0.01	0.00	0.00
-20.	550.	1500.	24.03	16546.	24.09	16546.	0.06	0.05	0.00
-20.	550.	1500.	24.03	4347.	24.09	4347.	0.06	0.18	0.02
-30.	300.	8500.	16.33	18265.	16.34	18264.	0.01	0.05	0.01
-30.	350.	2000.	19.37	7036.	19.38	7036.	0.01	0.10	0.01
-30.	350.	2000.	19.88	2677.	19.90	2678.	0.02	0.20	0.01
-30.	400.	14500.	22.35	9481.	22.39	9481.	0.04	0.30	0.03
-30.	450.	2000.	24.38	2804.	24.41	2803.	0.03	0.25	0.00
-30.	450.	15000.	24.50	12903.	24.51	12903.	0.01	0.06	0.00
-30.	500.	15000.	25.16	13277.	25.17	13276.	0.01	0.02	0.00
-30.	500.	15000.	25.09	13619.	25.10	13619.	0.01	0.02	0.00
-30.	550.	15000.	21.73	3712.	21.75	3711.	0.02	0.37	0.02
-30.	550.	15000.	21.10	14833.	21.10	14833.	0.00	0.07	0.00
-40.	300.	13500.	21.02	7759.	21.03	7759.	0.01	0.00	0.00
-40.	350.	15000.	21.44	2416.	21.45	2416.	0.01	0.02	0.00
-40.	350.	15000.	21.92	9197.	21.92	9197.	0.00	0.06	0.01
-40.	400.	15000.	20.82	2935.	20.84	2935.	0.02	0.14	0.02
-40.	400.	15000.	20.91	9991.	20.94	9990.	0.03	0.06	0.00
-40.	450.	15000.	20.36	3034.	20.37	3034.	0.01	0.06	0.01
-40.	500.	15000.	25.67	10689.	25.68	10689.	0.01	0.05	0.00
-40.	500.	15000.	13.34	3563.	13.35	3563.	0.01	0.01	0.01
-40.	500.	15000.	13.34	11288.	13.35	11288.	0.01	0.01	0.01

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTRAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME DIST	PER CENT TIME	PER CENT ERROR	DIST
-40.	550.	4000.	5.96	5.97	0.01	0.11	0.00	0.00
-40.	550.	15000.	18.77	18.81	0.04	0.20	-0.00	0.00
-45.	300.	2500.	5.66	5.66	0.00	0.03	0.02	0.02
-45.	300.	15000.	22.96	22.96	0.01	0.05	0.02	0.02
-45.	350.	3000.	21.16	21.16	0.00	0.08	0.01	0.01
-45.	350.	15000.	5.43	5.43	-0.00	-0.00	0.02	0.02
-45.	400.	3000.	20.11	20.12	0.01	0.06	0.01	0.01
-45.	400.	15000.	5.71	5.71	0.00	0.06	0.02	0.02
-45.	450.	3500.	19.21	19.21	0.00	0.01	0.02	0.02
-45.	450.	15000.	18.43	18.45	0.02	0.09	0.00	0.00
-45.	500.	4000.	16.16	16.45	0.01	0.13	0.01	0.01
-45.	500.	15000.	17.35	17.89	0.01	0.17	0.01	0.01
-45.	550.	4500.	20.61	20.63	0.02	0.08	0.00	0.00
-60.	300.	4000.	6.41	6.43	0.01	0.17	-0.01	-0.01
-60.	350.	4500.	19.33	19.43	0.00	0.00	0.00	0.00
-60.	400.	5000.	18.26	18.33	0.01	0.08	0.01	0.01
-60.	450.	5500.	17.29	17.32	0.00	0.01	0.00	0.00
-60.	500.	6500.	17.87	17.87	0.01	0.06	0.01	0.01
-60.	550.	7000.	16.88	16.89	0.02	0.15	-0.01	-0.01
-60.	550.	15000.	15.86	15.87	0.01	0.06	0.01	0.01
					0.01	0.00	0.00	0.00
					0.04	0.20	-0.00	0.00
					0.00	0.03	0.02	0.02
					0.01	0.05	0.01	0.01
					0.00	0.08	0.02	0.02
					0.00	-0.00	0.01	0.01
					0.01	0.06	0.02	0.02
					0.00	0.01	0.00	0.00
					0.02	0.09	0.01	0.01
					0.01	0.13	0.01	0.01
					0.00	0.17	0.01	0.01
					0.01	0.05	0.00	0.00
					0.00	0.08	0.01	0.01
					0.02	0.17	-0.01	-0.01
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.08	0.01	0.01
					0.00	0.01	0.00	0.00
					0.00	0.06	0.01	0.01
					0.02	0.15	-0.01	-0.01
					0.01	0.06	0.01	0.01
					0.00	0.00	0.00	0.00
					0.01	0.00	0.00	0.00
					0.00	0.06	0.01	0.01
					0.02	0.10	0.00	0.00
					0.01	0.06	0.01	0.01
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.00	0.00	0.00
					0.02	0.06	0.01	0.01
					0.01	0.10	0.00	0.00
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.06	0.01	0.01
					0.02	0.10	0.00	0.00
					0.01	0.06	0.01	0.01
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.00	0.00	0.00
					0.02	0.06	0.01	0.01
					0.01	0.10	0.00	0.00
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.06	0.01	0.01
					0.02	0.10	0.00	0.00
					0.01	0.06	0.01	0.01
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.00	0.00	0.00
					0.02	0.06	0.01	0.01
					0.01	0.10	0.00	0.00
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.06	0.01	0.01
					0.02	0.10	0.00	0.00
					0.01	0.06	0.01	0.01
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.00	0.00	0.00
					0.02	0.06	0.01	0.01
					0.01	0.10	0.00	0.00
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.06	0.01	0.01
					0.02	0.10	0.00	0.00
					0.01	0.06	0.01	0.01
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.00	0.00	0.00
					0.02	0.06	0.01	0.01
					0.01	0.10	0.00	0.00
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.06	0.01	0.01
					0.02	0.10	0.00	0.00
					0.01	0.06	0.01	0.01
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.00	0.00	0.00
					0.02	0.06	0.01	0.01
					0.01	0.10	0.00	0.00
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.06	0.01	0.01
					0.02	0.10	0.00	0.00
					0.01	0.06	0.01	0.01
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.00	0.00	0.00
					0.02	0.06	0.01	0.01
					0.01	0.10	0.00	0.00
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.06	0.01	0.01
					0.02	0.10	0.00	0.00
					0.01	0.06	0.01	0.01
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.00	0.00	0.00
					0.02	0.06	0.01	0.01
					0.01	0.10	0.00	0.00
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.06	0.01	0.01
					0.02	0.10	0.00	0.00
					0.01	0.06	0.01	0.01
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.00	0.00	0.00
					0.02	0.06	0.01	0.01
					0.01	0.10	0.00	0.00
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.06	0.01	0.01
					0.02	0.10	0.00	0.00
					0.01	0.06	0.01	0.01
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.00	0.00	0.00
					0.02	0.06	0.01	0.01
					0.01	0.10	0.00	0.00
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.06	0.01	0.01
					0.02	0.10	0.00	0.00
					0.01	0.06	0.01	0.01
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.00	0.00	0.00
					0.02	0.06	0.01	0.01
					0.01	0.10	0.00	0.00
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.06	0.01	0.01
					0.02	0.10	0.00	0.00
					0.01	0.06	0.01	0.01
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.00	0.00	0.00
					0.02	0.06	0.01	0.01
					0.01	0.10	0.00	0.00
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.06	0.01	0.01
					0.02	0.10	0.00	0.00
					0.01	0.06	0.01	0.01
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.00	0.00	0.00
					0.02	0.06	0.01	0.01
					0.01	0.10	0.00	0.00
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.06	0.01	0.01
					0.02	0.10	0.00	0.00
					0.01	0.06	0.01	0.01
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.00	0.00	0.00
					0.02	0.06	0.01	0.01
					0.01	0.10	0.00	0.00
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.06	0.01	0.01
					0.02	0.10	0.00	0.00
					0.01	0.06	0.01	0.01
					0.00	0.00	0.00	0.00
					0.00	0.00	0.00	0.00
					0.01	0.00	0.00	0.00
					0.02	0.06	0.01	0.01
					0.01	0.10	0.00	0.00
					0.00	0.00	0.00	0.00
					0.00			

WEAPON COEFFICIENTS FOR IDNO 16

CFORM1 = 1.6049995 DKG1 = 0.0 DM1 = 0.0 VMUZ = 0.0 DS = 0.0
 CFORM2 = 0.0 DKG2 = 0.0 DM2 = 0.0 FN = 0.0 SL = 0.0
 ITYPE = -1 IREF = 1 VE = 0.0
 IBOOTH = 1 DMAX = 5.00 DTI = 3.00

DEG	TAS	ALT	PLM NPS BOEING	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS BOEING	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME DIST	PER CENT TIME DIST	ERROR DIST
10.	300.	500.	8.93	4396.	8.93	4397.	0.00	0.02	0.00
10.	300.	3000.	16.74	8153.	16.74	8151.	0.01	0.06	-0.02
10.	350.	500.	9.59	5492.	9.60	5492.	0.00	0.04	-0.01
10.	350.	3000.	17.30	9784.	17.30	9784.	0.00	0.07	-0.00
10.	400.	500.	10.27	6702.	10.28	6700.	0.01	0.01	-0.03
10.	400.	3000.	17.87	1497.	17.87	1497.	0.00	0.10	-0.00
10.	450.	500.	10.97	18027.	10.98	18021.	0.01	0.03	-0.07
10.	450.	3000.	18.44	13290.	18.45	13290.	0.00	0.01	-0.00
10.	500.	500.	11.04	9455.	11.04	9455.	0.00	0.05	-0.01
10.	500.	3000.	19.03	15164.	19.04	15163.	0.01	0.04	-0.00
10.	550.	500.	12.43	17117.	12.44	17114.	0.00	0.08	-0.00
10.	550.	3000.	19.63	12569.	19.64	12566.	0.02	0.07	-0.03
10.	600.	500.	13.14	18994.	13.15	18994.	0.01	0.00	-0.00
10.	600.	3000.	20.24	13977.	20.24	13996.	0.00	0.13	-0.07
10.	650.	500.	13.78	20577.	13.80	20577.	0.02	0.04	-0.00
10.	650.	3000.	20.80	15098.	20.80	15098.	0.00	0.04	-0.01
10.	650.	1500.	9.69	4840.	9.70	4839.	0.01	0.05	-0.01
0.	300.	1500.	31.02	15098.	31.03	15096.	0.00	0.04	-0.01
0.	350.	1500.	31.07	17561.	31.09	17559.	0.02	0.05	-0.01
0.	400.	1500.	31.14	6431.	31.16	6431.	0.01	0.07	-0.01
0.	450.	1500.	31.90	20004.	31.92	20003.	0.02	0.05	-0.00
0.	450.	1500.	31.24	5913.	31.26	5908.	0.02	0.15	-0.09
0.	500.	1500.	31.91	22424.	31.92	22421.	0.03	0.09	-0.01
0.	500.	1500.	31.39	6561.	31.42	6555.	0.04	0.17	-0.10
0.	550.	1500.	31.91	24797.	31.92	24793.	0.01	0.19	-0.01
0.	550.	1500.	31.63	27208.	31.63	27200.	0.05	0.24	-0.02
0.	600.	1500.	31.92	7816.	31.93	7805.	0.02	0.19	-0.04
0.	600.	1500.	31.91	28824.	31.97	28818.	0.06	0.19	-0.02

DEG	TAS	ALT	PLM NPS TIME	VERSION MODIFIED BOEING ALGORITHM DIST	FORTAN NPS TIME	VERSION MODIFIED BOEING ALGORITHM DIST	DIFFERENCES TIME DIST	PER CENT TIME DIST	ERROR DIST
0.	650.	1000.	7.93	8349.	7.96	8332.	0.03	0.34	-0.20
10.	650.	1500.	32.27	30302.	32.26	30303.	-0.00	-0.01	-0.00
10.	300.	1500.	7.33	3620.	7.34	3619.	0.01	0.10	-0.02
10.	350.	1500.	13.38	6545.	13.39	6544.	0.01	0.07	-0.01
10.	350.	1500.	17.01	4035.	17.02	4034.	0.01	0.09	-0.01
10.	350.	1500.	14.89	8451.	14.90	8451.	0.00	0.01	-0.00
10.	400.	1500.	6.71	4409.	6.72	4409.	0.01	0.08	-0.01
10.	400.	1500.	17.03	10971.	17.04	10971.	0.01	0.00	-0.00
10.	450.	1500.	6.43	4746.	6.44	4746.	0.00	0.07	-0.00
10.	450.	1500.	18.89	13615.	18.90	13615.	0.01	0.05	-0.01
10.	500.	1500.	6.17	5050.	6.18	5051.	0.01	0.06	-0.01
10.	500.	1500.	21.27	16862.	21.28	16862.	0.01	0.04	-0.00
10.	550.	1500.	5.22	5325.	5.23	5325.	0.00	0.05	-0.01
10.	550.	1500.	23.57	20115.	23.58	20116.	0.00	0.01	-0.01
10.	600.	1500.	5.58	5558.	5.59	5559.	0.00	0.04	-0.01
10.	600.	1500.	25.84	23169.	25.85	23170.	0.00	0.22	-0.02
10.	650.	1500.	5.51	5146.	5.52	5146.	0.00	0.03	-0.01
10.	650.	1500.	27.06	25110.	27.07	25111.	0.01	0.03	-0.01
20.	300.	1500.	14.84	2688.	14.85	2689.	0.00	0.02	-0.01
20.	350.	1500.	5.27	6904.	5.28	6904.	0.00	0.01	-0.00
20.	350.	1500.	17.13	2897.	17.14	2897.	0.00	0.01	-0.00
20.	400.	1500.	19.11	3841.	19.12	3841.	0.00	0.05	-0.01
20.	450.	1500.	11.45	14044.	11.46	14044.	0.01	0.03	-0.01
20.	450.	1500.	21.38	14666.	21.39	14666.	0.00	0.03	-0.00
20.	500.	1500.	5.70	4215.	5.71	4215.	0.00	0.02	-0.01
20.	550.	1500.	23.33	17680.	23.34	17680.	0.00	0.02	-0.01
20.	550.	1500.	23.33	43770.	23.34	43770.	0.00	0.01	-0.00
20.	600.	1500.	24.99	18778.	24.99	18778.	0.00	0.01	-0.00
20.	650.	1500.	22.57	19660.	22.58	19660.	0.00	0.03	-0.03
30.	300.	1500.	22.57	4566.	22.58	4566.	0.00	0.02	-0.01
30.	350.	1500.	17.31	20408.	17.32	20408.	0.00	0.03	-0.02
30.	350.	1500.	19.29	7396.	19.30	7396.	0.00	0.02	-0.01
30.	400.	1500.	5.84	2684.	5.85	2684.	0.00	0.02	-0.01
30.	400.	1500.	22.84	9906.	22.85	9906.	0.00	0.01	-0.01
30.	400.	1500.	5.84	3380.	5.85	3380.	0.00	0.01	-0.01
30.	400.	1500.	22.32	12535.	22.33	12534.	0.00	0.12	-0.01

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
-30.	450.	2500.	5.41	5.41	0.00	0.02	0.01
-30.	450.	15000.	21.56	21.57	0.02	0.01	-0.00
-30.	500.	2500.	5.02	5.02	0.00	0.01	0.00
-30.	500.	15000.	20.90	20.91	0.01	0.03	0.00
-30.	550.	3000.	5.50	5.50	0.00	0.01	0.01
-30.	550.	15000.	20.37	20.37	0.00	0.01	0.01
-30.	600.	3000.	5.18	5.18	0.00	0.01	0.02
-30.	600.	15000.	19.87	19.87	0.00	0.01	0.03
-30.	650.	3000.	5.66	5.66	0.00	0.07	-0.01
-30.	650.	15000.	19.50	19.55	0.06	0.07	0.01
-30.	300.	2500.	5.97	5.97	0.00	0.04	-0.01
-40.	300.	15000.	22.47	22.48	0.01	0.09	-0.01
-40.	350.	3000.	5.40	5.40	0.00	0.01	0.00
-40.	350.	15000.	21.39	21.40	0.01	0.04	0.01
-40.	400.	3000.	5.75	5.75	0.00	0.03	0.02
-40.	400.	15000.	20.40	20.40	0.00	0.01	0.01
-40.	450.	3000.	5.27	5.28	0.01	0.01	0.01
-40.	450.	15000.	19.60	19.60	0.00	0.01	0.00
-40.	500.	3000.	5.71	5.74	0.03	0.03	0.01
-40.	500.	15000.	18.87	18.87	0.00	0.06	0.02
-40.	550.	3000.	5.14	5.14	0.00	0.01	0.01
-40.	550.	15000.	17.58	17.59	0.01	0.06	0.01
-40.	600.	3000.	6.42	6.42	0.00	0.12	0.01
-40.	600.	15000.	17.09	17.09	0.02	0.25	0.00
-45.	650.	3000.	5.09	5.09	0.00	0.01	0.01
-45.	650.	15000.	17.09	17.09	0.00	0.01	0.02
-45.	300.	2500.	5.61	5.61	0.00	0.05	0.01
-45.	300.	15000.	21.78	21.79	0.01	0.03	0.02
-45.	350.	3000.	5.90	5.90	0.00	0.01	0.02
-45.	350.	15000.	20.64	20.64	0.00	0.01	0.03
-45.	400.	3000.	5.37	5.37	0.00	0.01	0.00
-45.	400.	15000.	19.57	19.60	0.03	0.16	0.02
-45.	450.	3000.	5.63	5.64	0.01	0.03	0.02
-45.	450.	15000.	18.86	18.86	0.00	0.04	0.02
-45.	500.	3000.	5.86	5.86	0.00	0.08	0.02
-45.	500.	15000.	17.06	17.06	0.01	0.01	0.02
-45.	550.	3000.	6.06	6.06	0.00	0.08	0.02
-45.	600.	3000.	6.23	6.23	0.02	0.29	0.00
-45.	600.	15000.	16.59	16.65	0.06	0.37	-0.01

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NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF F/6 9/2
VERIFICATION AND FEASIBILITY STUDY OF A MICRO-COMPUTER BASED BA--ETC(U)
DEC 76 J T ERTLSCHEWIGER

F/6 9/2

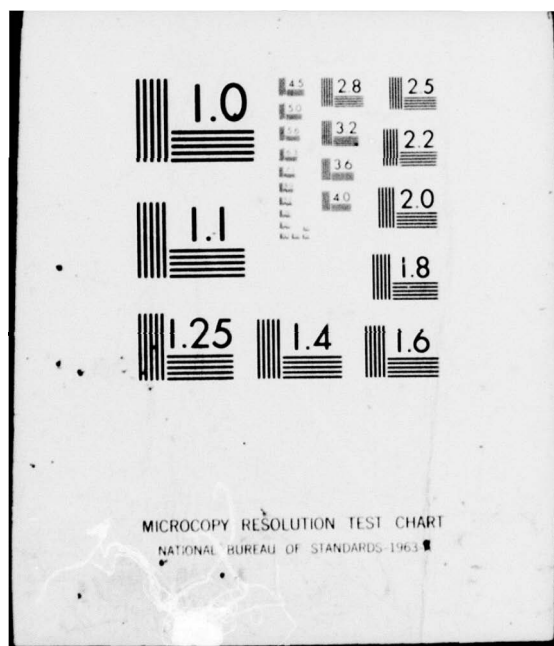
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DEG	TAS	ALT	PLM NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
-45.	650.	6000.	7.03	5216.	7.07	5215.	0.03	0.47	0.01
-45.	650.	15000.	16.09	11148.	16.13	11147.	0.04	0.27	-0.00
-60.	300.	4000.	16.26	11821.	17.27	11821.	0.01	0.12	0.00
-60.	300.	15000.	20.20	4961.	20.20	4961.	0.00	0.00	0.01
-60.	350.	4000.	6.54	1913.	6.55	1913.	0.00	0.08	0.00
-60.	350.	15000.	18.92	5405.	18.94	5405.	0.02	0.09	0.00
-60.	400.	4000.	17.80	2401.	17.80	2401.	0.00	0.14	-0.01
-60.	400.	15000.	17.20	5801.	17.21	5802.	0.01	0.02	0.01
-60.	450.	4000.	16.75	2696.	16.80	2696.	0.05	0.16	0.00
-60.	450.	15000.	17.92	6129.	17.93	6128.	0.01	0.27	-0.01
-60.	500.	4000.	15.71	3203.	15.73	3203.	0.02	0.19	0.01
-60.	500.	15000.	15.22	6401.	15.95	6401.	0.03	0.39	-0.03
-60.	550.	7000.	17.68	3498.	17.71	3497.	0.03	0.09	0.01
-60.	550.	15000.	15.71	6622.	15.71	6622.	0.01	0.06	0.02
-60.	600.	8500.	18.71	4222.	18.64	4223.	0.00	0.15	0.01
-60.	600.	15000.	14.63	6799.	14.63	6799.	0.00	0.02	0.01
-60.	650.	9500.	19.21	4727.	19.23	4727.	0.01	0.15	0.01
-60.	650.	15000.	13.97	6957.	14.06	6954.	0.09	0.16	-0.04

WEAPON COEFFICIENTS FOR IDNO 17

CFORM1 = 0.0
CFORM2 = 0.0
ITYPE = -1
IBOTH = 1

DKG1 = 0.0073290
DKG2 = 0.0
IREF = 4
DMAX = 3.00

DM1 = 0.0
DM2 = 0.0
VE = 0.0
DT1 = 1.00

VMUZ = 0.0
FN = 0.0

DS = 0.0
SL = 0.0

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
10.0	300.0	500.0	8.94	4297.0	0.00	0.04	-0.00
10.0	300.0	3000.0	16.90	7880.0	0.00	0.02	-0.00
10.0	350.0	500.0	17.47	5332.0	0.00	0.01	-0.00
10.0	400.0	500.0	18.27	9390.0	0.00	0.01	-0.00
10.0	450.0	500.0	18.05	6457.0	-0.00	-0.04	-0.01
10.0	450.0	500.0	18.63	10949.0	0.00	0.01	-0.00
10.0	450.0	500.0	18.65	7668.0	0.00	0.01	-0.00
10.0	500.0	500.0	19.22	12553.0	0.00	0.02	-0.00
10.0	500.0	500.0	19.36	8958.0	-0.00	-0.00	-0.01
10.0	550.0	500.0	19.81	14199.0	0.00	0.01	-0.00
10.0	550.0	500.0	19.79	10324.0	0.00	0.02	-0.00
10.0	300.0	1500.0	31.96	15883.0	0.00	0.03	-0.00
0.0	350.0	1500.0	31.98	14755.0	0.00	0.01	-0.00
0.0	350.0	1500.0	32.09	14441.0	0.00	0.01	-0.00
0.0	400.0	1500.0	32.08	14533.0	0.01	0.02	-0.00
0.0	450.0	1500.0	32.19	16711.0	0.00	0.01	-0.00
0.0	450.0	1500.0	32.01	15162.0	0.00	0.02	-0.00
0.0	500.0	1500.0	32.30	18941.0	0.00	0.02	-0.00
0.0	500.0	1500.0	32.02	5784.0	0.00	0.01	-0.00
0.0	550.0	1500.0	32.03	21129.0	0.00	0.01	-0.00
0.0	550.0	1500.0	32.07	63280.0	0.00	0.01	-0.00
0.0	550.0	1500.0	32.41	27017.0	0.00	0.01	-0.00
0.0	550.0	1500.0	32.03	25395.0	0.00	0.01	-0.00
0.0	550.0	1500.0	32.52	2765.0	0.00	0.01	-0.00
0.0	550.0	1500.0	32.68	2944.0	0.00	0.04	-0.00
0.0	300.0	1500.0	12.53	3054.0	0.00	0.02	-0.00
0.0	350.0	1500.0	15.23	8241.0	0.00	0.01	-0.00
0.0	400.0	1500.0	15.13	3310.0	0.00	0.01	-0.00
0.0	400.0	1500.0	16.67	10162.0	0.00	0.01	-0.00

DEG	TAS	ALT	PLM NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME	DIFFERENCES DIST	PER CENT TIME	PER CENT DIST
-10.	450.	1000.	4.87	3535.	4.88	3535.	0.00	0.	0.10	0.00
-10.	450.	1500.	18.74	12647.	18.64	12646.	0.00	0.	0.07	0.00
-10.	500.	1000.	4.68	13734.	4.69	13734.	0.00	0.	0.01	0.00
-10.	500.	1500.	20.68	15215.	20.69	15215.	0.00	0.	0.04	0.00
-10.	550.	1000.	4.45	13910.	4.45	13910.	0.00	0.	0.01	0.00
-10.	550.	1500.	22.45	17864.	22.45	17864.	0.00	0.	0.05	0.00
-20.	300.	1500.	5.76	2674.	5.76	2674.	0.00	0.	0.00	0.00
-20.	350.	1500.	14.33	6416.	14.33	6416.	0.00	0.	0.00	0.00
-20.	350.	1500.	15.33	2882.	15.33	2882.	0.00	0.	0.02	0.00
-20.	350.	1500.	16.91	8669.	16.92	8669.	0.01	0.	0.03	0.00
-20.	400.	1500.	19.95	3053.	19.95	3053.	0.00	0.	0.11	0.00
-20.	450.	1500.	4.14	11017.	4.14	11016.	0.00	0.	0.06	0.00
-20.	450.	1500.	19.61	13454.	19.61	13454.	0.00	0.	0.01	0.00
-20.	500.	1500.	21.12	14190.	21.12	14190.	0.00	0.	0.04	0.00
-20.	500.	1500.	23.48	16338.	23.48	16338.	0.00	0.	0.01	0.00
-20.	550.	1500.	25.17	18251.	25.17	18251.	0.00	0.	0.01	0.00
-20.	550.	1500.	25.88	22503.	25.88	22503.	0.00	0.	0.01	0.00
-30.	300.	2000.	4.13	6981.	4.13	6981.	0.00	0.	0.07	0.00
-30.	350.	2000.	17.37	2673.	17.37	2673.	0.00	0.	0.02	0.00
-30.	350.	2000.	19.92	9126.	19.92	9126.	0.00	0.	0.00	0.00
-30.	400.	2000.	22.53	2799.	22.53	2799.	0.00	0.	0.11	0.00
-30.	450.	2000.	22.54	11898.	22.54	11897.	0.00	0.	0.06	0.00
-30.	500.	2000.	25.45	13132.	25.45	13132.	0.00	0.	0.00	0.00
-30.	500.	2000.	25.16	13612.	25.16	13612.	0.00	0.	0.01	0.00
-30.	550.	2000.	21.78	14024.	21.78	14023.	0.00	0.	0.01	0.00
-30.	550.	2000.	20.99	14705.	20.99	14705.	0.00	0.	0.03	0.00
-40.	300.	1500.	6.06	14839.	6.06	14838.	0.01	0.	0.01	0.00
-40.	350.	1500.	21.48	2688.	21.48	2688.	0.00	0.	0.01	0.00
-40.	350.	1500.	21.48	29106.	21.48	29106.	0.00	0.	0.03	0.00
-40.	400.	1500.	22.85	29895.	22.85	29895.	0.00	0.	0.08	0.00
-40.	400.	1500.	21.23	3029.	21.23	3029.	0.00	0.	0.03	0.00
-40.	450.	1500.	20.30	10598.	20.30	10598.	0.00	0.	0.00	0.00
-40.	500.	1500.	19.72	11226.	19.72	11226.	0.00	0.	0.08	0.00

DEG	TAS	ALT	PLM NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
-40.	550.	4000.	6.02	4091.	6.02	4091.	0.00	0.01	0.00
-40.	550.	15000.	18.60	11786.	18.60	11786.	0.00	0.00	0.00
-45.	300.	2500.	5.69	11987.	5.69	11987.	0.00	0.05	0.02
-45.	300.	15000.	22.61	7371.	22.61	7371.	0.00	0.01	0.00
-45.	350.	3000.	5.99	2431.	6.00	2431.	0.01	0.10	0.01
-45.	350.	15000.	21.47	8133.	21.47	8133.	0.00	0.03	0.02
-45.	400.	13000.	5.46	2528.	5.46	2528.	0.00	0.08	0.02
-45.	400.	15000.	20.75	8802.	20.75	8802.	0.00	0.00	0.00
-45.	450.	13500.	5.42	2979.	5.42	2979.	0.00	0.00	0.00
-45.	450.	15000.	19.00	9394.	19.00	9394.	0.00	0.13	0.02
-45.	500.	14000.	5.51	3435.	5.51	3435.	0.01	0.01	0.01
-45.	500.	15000.	18.22	9915.	18.22	9915.	0.00	0.02	0.02
-45.	550.	4500.	6.25	3895.	6.26	3896.	0.00	0.01	0.00
-45.	550.	15000.	17.40	10379.	17.40	10379.	0.00	0.02	0.00
-60.	300.	4000.	7.96	1812.	7.96	1812.	0.00	0.03	0.01
-60.	300.	15000.	20.67	4858.	20.67	4858.	0.01	0.04	0.00
-60.	350.	4000.	6.69	1905.	6.69	1905.	0.00	0.01	0.00
-60.	350.	15000.	19.39	5308.	19.39	5308.	0.00	0.01	0.00
-60.	400.	15000.	18.53	2694.	18.53	2694.	0.00	0.02	0.00
-60.	450.	15000.	17.46	5682.	17.47	5683.	0.00	0.02	0.01
-60.	500.	15000.	17.95	6026.	17.96	6026.	0.01	0.01	0.01
-60.	550.	15000.	16.49	3184.	16.49	3185.	0.00	0.01	0.01
-60.	550.	17000.	17.93	6378.	17.94	6378.	0.01	0.01	0.01
-60.	550.	15000.	15.60	6559.	15.61	6559.	0.01	0.10	0.00

WEAPON COEFFICIENTS FOR IDNO 18

CFORM1 = 0.0
CFORM2 = 0.0168950
ITYPE = 1
IBOTH = 2

DKG1 = 0.0073290
DKG2 = 0.1716599
IREF = 1
DMAX = 5.00

DM1 = 0.0
DM2 = 0.3800000
VE = 0.0
DTI = 2.00

VMUZ = 0.0
FN = 0.0
DS = 0.6617000
SL = -0.0002690

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
0.	300.	300.	4.85	4.85	0.00	0.00	-0.00
0.	300.	1000.	9.60	9.60	0.00	0.00	-0.00
0.	350.	200.	3.91	3.91	0.00	0.00	-0.00
0.	350.	1100.	10.29	10.29	0.00	0.00	-0.00
0.	400.	1200.	10.94	10.94	0.00	0.00	-0.01
0.	400.	1200.	10.97	10.97	0.00	0.00	0.00
0.	450.	1300.	11.56	11.56	0.00	0.00	-0.00
0.	450.	1300.	13.99	13.99	0.00	0.00	0.00
0.	500.	1400.	12.14	12.14	0.00	0.00	0.00
0.	500.	1400.	13.99	13.99	0.00	0.00	0.01
0.	550.	1500.	13.66	13.66	0.00	0.00	0.01
0.	550.	1500.	14.27	14.27	0.00	0.01	0.00
10.	300.	1500.	9.97	9.97	0.00	0.00	0.00
10.	300.	1500.	4.13	4.13	0.00	0.00	0.00
10.	350.	2000.	12.26	12.26	0.00	0.00	0.00
10.	350.	2000.	12.05	12.05	0.00	0.00	0.00
10.	400.	2000.	12.23	12.23	0.00	0.00	0.00
10.	400.	2000.	12.29	12.29	0.00	0.00	-0.00
10.	450.	2000.	12.22	12.22	0.00	0.01	0.00
10.	450.	2000.	14.69	14.69	0.00	0.01	0.00
10.	500.	2500.	14.46	14.46	0.00	0.00	0.00
10.	500.	2500.	15.48	15.48	0.00	0.01	0.00
10.	550.	2500.	14.48	14.48	0.00	0.00	0.00
20.	300.	800.	14.54	14.54	0.00	0.01	0.00
20.	300.	800.	12.54	12.54	0.00	0.00	0.00
20.	350.	900.	14.82	14.82	0.00	0.00	0.00
20.	350.	900.	12.31	12.31	0.00	0.00	0.00
20.	400.	1000.	15.20	15.20	0.00	0.00	0.00
20.	400.	1000.	14.24	14.24	0.00	0.00	0.00
-10.	300.	300.	4.85	4.85	0.00	0.00	-0.00
-10.	300.	1000.	9.60	9.60	0.00	0.00	-0.00
-10.	350.	200.	3.91	3.91	0.00	0.00	-0.00
-10.	350.	1100.	10.29	10.29	0.00	0.00	-0.00
-10.	400.	1200.	10.94	10.94	0.00	0.00	-0.01
-10.	400.	1200.	10.97	10.97	0.00	0.00	0.00
-10.	450.	1300.	11.56	11.56	0.00	0.00	-0.00
-10.	450.	1300.	13.99	13.99	0.00	0.00	0.00
-10.	500.	1400.	12.14	12.14	0.00	0.00	0.00
-10.	500.	1400.	13.99	13.99	0.00	0.00	0.01
-10.	550.	1500.	13.66	13.66	0.00	0.00	0.01
-10.	550.	1500.	14.27	14.27	0.00	0.01	0.00
-10.	300.	1500.	9.97	9.97	0.00	0.00	0.00
-10.	300.	1500.	4.13	4.13	0.00	0.00	0.00
-10.	350.	2000.	12.26	12.26	0.00	0.00	0.00
-10.	350.	2000.	12.05	12.05	0.00	0.00	0.00
-10.	400.	2000.	12.23	12.23	0.00	0.00	0.00
-10.	400.	2000.	12.29	12.29	0.00	0.00	-0.00
-10.	450.	2000.	12.22	12.22	0.00	0.01	0.00
-10.	450.	2000.	14.69	14.69	0.00	0.01	0.00
-10.	500.	2500.	14.46	14.46	0.00	0.00	0.00
-10.	500.	2500.	15.48	15.48	0.00	0.01	0.00
-10.	550.	2500.	14.48	14.48	0.00	0.00	0.00
-20.	300.	800.	14.54	14.54	0.00	0.01	0.00
-20.	300.	800.	12.54	12.54	0.00	0.00	0.00
-20.	350.	900.	14.82	14.82	0.00	0.00	0.00
-20.	350.	900.	12.31	12.31	0.00	0.00	0.00
-20.	400.	1000.	15.20	15.20	0.00	0.00	0.00
-20.	400.	1000.	14.24	14.24	0.00	0.00	0.00

DEG	TAS	ALT	PLM NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME DIST	PER CENT TIME ERROR	DIST
-45.	550.	4500.	15.00	2646.	15.00	2646.	0.00	0.00	0.02
-45.	550.	7000.	23.12	3128.	23.12	3129.	0.00	0.00	0.02
-60.	300.	4000.	13.05	1395.	13.12	1395.	0.00	0.00	0.01
-60.	300.	11000.	38.04	1892.	38.04	1892.	-0.00	0.00	0.01
-60.	350.	12000.	12.44	1489.	12.44	1489.	0.00	0.01	0.01
-60.	350.	14000.	40.64	2095.	40.64	2095.	-0.00	0.00	0.02
-60.	400.	15000.	15.54	1730.	15.54	1730.	0.00	0.00	0.01
-60.	400.	13000.	13.29	2282.	13.29	2282.	-0.00	0.00	0.03
-60.	450.	15500.	16.98	1868.	16.98	1868.	0.00	0.00	0.01
-60.	450.	14000.	45.98	2454.	45.98	2454.	-0.00	0.00	0.02
-60.	500.	16500.	20.22	2041.	20.22	2041.	-0.00	0.00	0.01
-60.	500.	14500.	47.12	2585.	47.12	2585.	-0.00	0.00	0.02
-60.	550.	17000.	21.83	2128.	21.83	2128.	0.00	0.00	0.02
-60.	550.	15000.	48.32	2700.	48.32	2701.	-0.00	0.00	0.03

WEAPON COEFFICIENTS FOR IDNO 20

CFORM1 = 2.2572994
 CFORM2 = 0.0111360
 ITYPE = 1
 IBOOTH = 2
 DKG1 = 0.0081750
 DKG2 = 0.1688499
 IREF = 1
 DMAX = 5.00
 DM1 = 0.3200000
 DM2 = 0.4100000
 VE = 0.0
 DTI = 2.00
 VMUZ = 0.
 FN = 0.
 DS = 4.0599995
 SL = 0.0

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTTRAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
10.	300.	500.	9.84	9.84	0.00	0.01	0.01
10.	300.	3000.	21.59	21.59	0.00	0.00	-0.01
10.	350.	3000.	22.33	22.33	0.00	0.00	-0.01
10.	400.	3000.	11.40	11.40	-0.00	-0.00	-0.01
10.	450.	3000.	12.05	12.05	-0.00	-0.00	-0.01
10.	450.	3000.	22.59	22.59	-0.00	-0.00	-0.01
10.	500.	3000.	12.66	12.66	-0.00	-0.00	-0.01
10.	550.	3000.	13.25	13.25	-0.00	-0.00	-0.01
10.	550.	3000.	24.63	24.63	-0.00	-0.00	-0.01
10.	550.	3000.	9.10	9.10	-0.00	-0.00	-0.01
0.	300.	15000.	59.42	59.42	-0.01	-0.01	-0.01
0.	350.	15000.	59.27	59.27	-0.00	-0.00	-0.01
0.	400.	15000.	59.44	59.44	-0.00	-0.00	-0.01
0.	400.	15000.	60.10	60.10	-0.00	-0.00	-0.00
0.	450.	15000.	59.60	59.60	-0.00	-0.00	-0.01
0.	450.	15000.	60.37	60.37	-0.00	-0.00	-0.01
0.	500.	15000.	59.75	59.75	-0.00	-0.00	-0.01
0.	550.	15000.	60.63	60.63	-0.01	-0.01	-0.01
0.	550.	15000.	60.88	60.88	-0.00	-0.00	-0.01
0.	550.	15000.	60.90	60.90	-0.00	-0.00	-0.02
10.	300.	15000.	5587.	5587.	-0.00	-0.00	0.00
10.	300.	15000.	5348.	5348.	0.00	0.02	0.00
10.	300.	15000.	13.22	13.22	0.00	0.02	0.00
10.	350.	15000.	18.14	18.14	0.00	0.02	0.00
10.	400.	15000.	15.13	15.13	0.00	0.02	0.00
10.	400.	15000.	17.11	17.11	0.00	0.01	-0.01

DEG	TAS	ALT	PLM NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	FORTAN NPS BOEING TIME	VERSION MODIFIED ALGORITHM DIST	DIFFERENCES TIME DIST	PER CENT TIME ERROR	PER CENT DIST ERROR
-10	450	1500	7.93	4334	7.93	4334	0.00	0.02	0.00
-10	450	1500	17.01	6030	17.02	6029	0.00	0.01	0.00
-10	500	1500	17.74	4580	17.74	4580	0.00	0.03	0.00
-10	500	1500	18.94	6627	18.94	6626	0.00	0.01	0.00
-10	550	2000	10.80	5554	10.80	5554	0.00	0.02	0.00
-10	550	2000	20.38	7215	20.39	7215	0.00	0.01	0.00
-20	300	2000	14.55	3123	14.56	3123	0.00	0.02	0.00
-20	350	2000	17.85	4056	17.85	4056	0.00	0.01	0.00
-20	350	2000	16.02	3413	16.02	3413	0.00	0.03	0.00
-20	400	2500	17.52	4717	17.52	4716	0.00	0.02	0.00
-20	400	2500	19.48	4163	19.48	4163	0.00	0.03	0.00
-20	450	2500	19.08	5327	19.08	5326	0.00	0.01	0.00
-20	450	2500	19.06	4401	19.06	4401	0.00	0.03	0.00
-20	500	2500	18.74	5874	18.74	5874	0.00	0.02	0.00
-20	500	2500	20.60	4605	20.60	4605	0.00	0.03	0.00
-20	550	3000	22.31	6387	22.31	6387	0.00	0.01	0.00
-20	550	3000	22.09	4812	22.09	4812	0.00	0.03	0.00
-30	300	2500	28.35	6908	28.35	6908	0.00	0.02	0.00
-30	350	2500	17.80	2855	17.80	2855	0.00	0.02	0.00
-30	350	2500	17.64	3961	17.64	3960	0.00	0.03	0.00
-30	350	2500	18.86	3081	18.86	3081	0.00	0.02	0.00
-30	400	3000	18.85	4520	18.85	4520	0.00	0.03	0.00
-30	400	3000	19.99	3677	19.99	3677	0.00	0.02	0.00
-30	450	3000	18.28	5036	18.28	5035	0.00	0.03	0.00
-30	450	3000	22.99	3854	22.99	3854	0.00	0.02	0.00
-30	500	3000	27.79	5609	27.79	5609	0.00	0.03	0.00
-30	500	3000	24.20	4003	24.20	4003	0.00	0.02	0.00
-30	550	3500	29.10	6051	29.10	6051	0.00	0.03	0.00
-30	550	3500	25.36	4592	25.36	4593	0.00	0.01	0.00
-40	300	2500	21.06	6508	21.06	6508	0.00	0.03	0.00
-40	350	3000	27.66	2537	27.66	2537	0.00	0.01	0.00
-40	350	3000	23.54	3634	23.54	3634	0.00	0.03	0.00
-40	400	3500	27.55	2717	27.55	2717	0.00	0.02	0.00
-40	400	3500	23.83	4186	23.83	4186	0.00	0.03	0.00
-40	450	4000	24.57	3183	24.57	3183	0.00	0.02	0.00
-40	450	4000	27.91	4621	27.91	4621	0.00	0.03	0.00
-40	500	4500	27.02	3315	27.02	3315	0.00	0.01	0.00
-40	500	4500	28.96	5082	28.96	5082	0.00	0.03	0.00
-40	500	4500	27.94	3765	27.94	3765	0.00	0.01	0.00

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
-40	550	4000	8:29	3890	0:00	0:04	0:01
-45	550	10500	30:48	5931	0:00	0:02	0:01
-45	300	3000	7:84	2235	0:00	0:01	0:01
-45	350	7500	23:63	3433	0:00	0:01	0:01
-45	350	3500	8:54	2651	0:00	0:03	0:01
-45	400	3500	25:75	3926	0:00	0:01	0:01
-45	450	3500	28:33	2788	0:00	0:04	0:02
-45	450	9500	28:61	4378	0:00	0:02	0:01
-45	450	10500	30:80	3184	0:00	0:03	0:02
-45	500	4000	30:98	4791	0:00	0:01	0:01
-45	500	11500	33:23	3290	0:00	0:03	0:02
-45	550	4500	33:83	5198	0:00	0:01	0:01
-45	550	12000	33:93	3689	0:01	0:03	0:01
-60	300	4000	33:41	5573	0:00	0:03	0:01
-60	350	15000	46:06	1731	0:00	0:00	0:02
-60	350	15000	46:33	2743	0:00	0:03	0:01
-60	400	15000	44:66	1841	0:00	0:00	0:02
-60	400	15000	10:39	3047	0:00	0:00	0:00
-60	450	15000	43:51	2254	0:00	0:03	0:00
-60	450	15000	42:22	3345	0:00	0:03	0:01
-60	500	15000	42:21	2357	0:00	0:00	0:00
-60	500	15000	13:07	3573	0:00	0:03	0:00
-60	550	15000	13:08	2792	0:00	0:01	0:01
-60	550	17000	13:83	3116	0:00	0:02	0:01
-60	550	15000	39:85	4035	0:00	0:01	0:01

WEAPON COEFFICIENTS FOR IDNO 21

CFORM1 = 2.2403994
CFORM2 = 0.1178000

ITYPE = 1
IBOTH = 2

DKG1 = 0.0
DKG2 = 0.0

IREF = 1
DMAX = 5.00

DM1 = 0.0
DM2 = 0.0

VE = 0.0
DTI = 1.62

VMUZ = 0.0
FN = 0.0

DS = 4.0000000
SL = 0.0

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	DIST	PER CENT TIME	ERROR DIST
10.	400.	500.	12.20	4720.	0.00	0.0	0.00	0.00
10.	400.	3000.	12.27	5552.	0.00	1.0	0.01	0.01
10.	450.	500.	13.00	5268.	0.00	1.0	0.00	0.01
10.	450.	3000.	26.67	6077.	0.00	1.0	0.00	0.01
10.	500.	500.	13.73	5754.	0.00	1.0	0.01	0.01
10.	500.	3000.	27.32	6545.	0.00	1.0	0.00	0.00
10.	550.	500.	14.31	6090.	0.00	1.0	0.00	0.00
10.	550.	3000.	27.83	6876.	0.00	1.0	0.00	0.01
0.	400.	500.	13.36	4873.	0.00	0.0	0.00	0.00
0.	400.	1500.	13.21	6515.	0.01	0.0	0.00	0.04
0.	450.	1500.	15.58	5354.	0.00	2.0	0.02	0.00
0.	450.	1500.	13.49	7104.	0.01	2.0	0.00	0.02
0.	500.	1500.	10.52	5309.	0.00	2.0	0.01	0.00
0.	500.	1500.	15.77	7619.	0.01	2.0	0.00	0.03
0.	550.	1500.	10.00	5560.	0.00	2.0	0.00	0.00
0.	550.	1500.	17.58	8003.	0.01	2.0	0.02	0.00
-10.	400.	3000.	11.06	4548.	0.00	0.0	0.01	0.01
-10.	450.	3000.	11.31	5026.	0.00	0.0	0.01	0.01
-10.	450.	2350.	11.43	4944.	0.00	0.0	0.01	0.01
-10.	500.	2000.	11.14	5626.	0.00	0.0	0.01	0.01
-10.	500.	2000.	11.84	5260.	0.00	0.0	0.01	0.01
-10.	550.	2000.	21.20	6122.	0.00	0.0	0.01	0.01
-10.	550.	2000.	21.88	5422.	0.00	0.0	0.01	0.01
-20.	400.	3000.	12.89	6312.	0.00	0.0	0.01	0.01
-20.	400.	3000.	12.51	4444.	0.00	0.0	0.01	0.01
-20.	450.	3000.	20.57	4899.	0.00	1.0	0.01	0.01
-20.	450.	3000.	22.39	4789.	0.00	1.0	0.01	0.01
-20.	500.	3000.	11.87	5412.	0.00	1.0	0.01	0.01
-20.	500.	3000.	12.01	5048.	0.00	1.0	0.01	0.01
-20.	500.	3000.	12.81	5748.	0.00	1.0	0.01	0.01

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
-20:	550:	3000:	11:42	11:42	0:00	0:01	0:01
-20:	550:	3500:	11:43	11:43	0:00	0:01	0:01
-30:	400:	3500:	11:23	11:23	0:00	0:01	0:01
-30:	450:	3500:	10:56	10:56	0:00	0:02	0:02
-30:	450:	3500:	10:56	10:56	0:00	0:01	0:01
-30:	500:	3500:	10:49	10:49	0:00	0:02	0:02
-30:	500:	3500:	10:49	10:49	0:00	0:01	0:01
-30:	550:	3500:	12:36	12:36	0:00	0:01	0:01
-30:	550:	4000:	12:36	12:36	0:00	0:01	0:01
-40:	400:	7000:	11:26	11:26	0:00	0:01	0:03
-40:	400:	7500:	12:52	12:52	0:00	0:01	0:02
-40:	450:	4500:	12:52	12:52	0:00	0:01	0:01
-40:	450:	8000:	10:50	10:50	0:00	0:01	0:03
-40:	500:	8500:	10:62	10:62	0:00	0:01	0:01
-40:	500:	8500:	10:62	10:62	0:00	0:01	0:02
-40:	550:	9500:	12:43	12:43	0:00	0:01	0:04
-45:	400:	4500:	12:04	12:04	0:00	0:01	0:02
-45:	450:	4500:	11:17	11:17	0:00	0:01	0:03
-45:	450:	9500:	10:59	10:59	0:00	0:02	0:03
-45:	500:	10000:	13:52	13:52	0:01	0:02	0:02
-45:	550:	10500:	13:41	13:41	0:01	0:02	0:04
-45:	550:	10500:	13:41	13:41	0:01	0:02	0:04

WEAPON COEFFICIENTS FOR IDNO 22

CFORM1 = 0.0
 CFORM2 = 0.0230625
 ITYPE = 1
 IBOOTH = 2
 DKG1 = 0.0097670
 DKG2 = 0.2328700
 IREF = 1
 DMAX = 5.00
 DM1 = 0.0
 DM2 = 0.3800000
 VE = 0.0
 DTI = 1.62
 VMUZ = 0.
 FN = 0.
 DS = 0.6790000
 SL = -.0003030

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTMAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
0.	300.	200.	4.00	4.00	0.00	0.00	-0.00
0.	300.	800.	8.79	8.79	0.00	0.00	-0.00
0.	350.	200.	4.06	4.06	0.00	0.00	-0.00
0.	350.	900.	9.55	9.55	0.00	0.00	-0.00
0.	400.	200.	4.10	4.10	0.00	0.01	0.00
0.	400.	1000.	10.26	10.27	0.00	0.00	0.00
0.	450.	200.	4.13	4.09	0.00	0.00	0.00
0.	450.	1100.	10.94	10.94	0.00	0.00	0.00
0.	500.	200.	4.13	4.14	0.00	0.00	0.00
0.	500.	1200.	11.55	11.55	0.00	0.01	0.01
0.	550.	200.	4.16	4.16	0.00	0.00	0.00
0.	550.	1200.	11.56	11.56	0.00	0.00	0.01
0.	550.	1500.	14.52	14.52	0.00	0.00	0.01
-10.	300.	1500.	10.66	10.66	0.00	0.00	0.01
-10.	350.	1500.	10.61	10.61	0.00	0.01	0.01
-10.	400.	1500.	10.34	10.34	0.00	0.01	0.01
-10.	450.	1500.	10.58	10.58	0.00	0.01	0.01
-10.	450.	600.	15.04	15.05	0.00	0.01	0.00
-10.	500.	2000.	13.18	13.18	0.00	0.01	0.01
-10.	500.	2000.	13.07	13.07	0.00	0.01	0.00
-10.	550.	2000.	13.20	13.20	0.00	0.01	0.01
-10.	550.	700.	15.86	15.86	0.00	0.01	0.01
-10.	550.	2000.	13.24	13.24	0.00	0.01	0.01
-20.	300.	2000.	11.31	11.31	0.00	0.01	0.00
-20.	350.	2000.	11.22	11.22	0.00	0.01	0.00
-20.	350.	2000.	11.10	11.10	0.00	0.01	0.00
-20.	400.	1000.	15.65	15.65	0.00	0.01	0.01
-20.	400.	2500.	13.40	13.40	0.00	0.00	0.00

DEG	TAS	ALT	PLM VERSION NPS MODIFIED BOEING ALGORITHM TIME	FORTAN VERSION NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME DIST	PER CENT TIME	ERROR DIST
-45.	550.	4500.	17.65	17.66	0.00	0.01	0.02
-45.	550.	6000.	23.98	23.98	0.00	0.01	0.03
-60.	300.	4000.	15.14	15.14	0.00	0.01	0.01
-60.	300.	8500.	34.15	34.15	0.00	0.01	0.02
-60.	350.	4000.	14.48	14.48	0.00	0.00	0.02
-60.	350.	9500.	37.50	37.50	0.00	0.01	0.02
-60.	400.	5000.	18.27	18.28	0.00	0.00	0.02
-60.	400.	10000.	38.91	38.92	0.01	0.02	0.02
-60.	450.	5500.	20.04	20.04	0.00	0.01	0.01
-60.	450.	10500.	40.44	40.45	0.01	0.01	0.02
-60.	500.	6500.	24.00	24.04	0.00	0.01	0.02
-60.	500.	11500.	44.00	44.01	0.01	0.02	0.03
-60.	550.	7000.	26.06	26.06	0.00	0.01	0.02
-60.	550.	12000.	45.71	45.72	0.01	0.02	0.03
			2278.	2279.	0.00	0.01	0.02
			2482.	2483.	0.00	0.01	0.03
			1257.	1257.	0.00	0.01	0.01
			1496.	1496.	0.00	0.01	0.02
			1346.	1346.	0.00	0.00	0.02
			1653.	1654.	0.00	0.01	0.02
			1522.	1522.	0.00	0.00	0.02
			1776.	1776.	0.00	0.02	0.02
			1621.	1622.	0.01	0.01	0.01
			1880.	1880.	0.00	0.01	0.02
			1729.	1730.	0.01	0.01	0.02
			1986.	1987.	0.01	0.02	0.03
			1775.	1775.	0.00	0.01	0.02
			2054.	2054.	0.01	0.02	0.03

APPENDIX B

This appendix compares the NAVAIR 01-1C-1T-1 Ballistics Tables with the results of the FORTRAN version of the ballistics algorithm. The difference in down range travel and time of fall is presented.

WEAPON COEFFICIENTS FOR IDNO 4

CFORM1 = 0.0039235
 CFORM2 = 0.0
 ITYPE = -1
 IBOTH = 1
 DKG1 = 0.0027540
 DKG2 = 0.0
 IREF = 2
 DMAX = 3.00
 DM1 = 0.0
 DM2 = 0.0
 VE = 0.0
 DTI = 2.00
 VMUZ = 0.0
 FN = 0.0
 DS = 0.0
 SL = 0.0

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TABLES TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
10.	300.	500.	8.96	4178.	-0.02	-0.18	-0.30
10.	300.	3000.	17.07	7576.	-0.01	-0.07	-0.18
10.	350.	3000.	17.59	5151.	-0.02	-0.20	-0.03
10.	400.	3000.	17.64	8970.	-0.02	-0.10	-0.09
10.	450.	3000.	18.22	6191.	-0.03	-0.27	-0.12
10.	450.	3000.	18.90	10384.	-0.02	-0.11	-0.14
10.	450.	3000.	18.99	17276.	-0.04	-0.30	-0.36
10.	500.	3000.	18.79	11790.	-0.05	-0.40	-0.08
10.	500.	3000.	11.54	8376.	-0.05	-0.43	-0.61
10.	500.	3000.	11.36	13146.	-0.05	-0.44	-0.27
10.	550.	3000.	12.16	9437.	-0.05	-0.20	-0.31
10.	550.	3000.	19.89	14400.	-0.01	-0.16	-0.01
0.	300.	15000.	33.06	2735.	-0.05	-0.19	-0.30
0.	350.	15000.	33.65	13728.	-0.02	-0.17	-0.14
0.	350.	15000.	33.24	15802.	-0.06	-0.33	-0.16
0.	400.	15000.	33.66	17787.	-0.02	-0.13	-0.41
0.	450.	15000.	33.46	14038.	-0.02	-0.37	-0.02
0.	450.	15000.	33.69	19652.	-0.02	-0.05	-0.67
0.	500.	15000.	33.68	19648.	-0.03	-0.49	-0.32
0.	500.	15000.	33.95	21320.	-0.01	-0.33	-0.92
0.	500.	15000.	33.70	4831.	-0.03	-0.50	-0.34
0.	500.	15000.	34.21	22763.	-0.02	-0.14	-0.39
0.	500.	15000.	34.52	1710.	-0.02	-0.09	-0.09
0.	500.	15000.	33.80	5813.	-0.01	-0.45	-0.34
0.	500.	15000.	12.30	18556.	-0.02	-0.18	-0.01
0.	500.	15000.	14.60	19777.	-0.03	-0.35	-0.49
0.	500.	15000.	13.07	9359.	-0.01	-0.26	-0.11
0.	500.	15000.	16.24		-0.04		

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS DIST	NPS BOEING TIME	MODIFIED ALGORITHM DIST	DIFFERENCES TIME	DIFFERENCES DIST	PER CENT TIME	PER CENT ERROR DIST
-10.	450.	1000.	96	4.95	3497.	-0.01	-10.	-0.26	-0.29
-10.	450.	1000.	18.66	18.63	11655.	-0.03	-3.	-0.03	-0.03
-10.	500.	1000.	4.08	20.73	13687.	-0.01	-16.	-0.02	-0.04
-10.	550.	1000.	20.08	20.08	13475.	-0.00	-33.	-0.02	-0.05
-10.	550.	1000.	21.50	21.52	13848.	-0.02	-46.	-0.10	-0.30
-20.	300.	1500.	14.26	14.25	15223.	-0.01	-3.	-0.14	-0.05
-20.	350.	1000.	13.90	13.89	19559.	-0.02	-4.	-0.15	-0.05
-20.	350.	1000.	16.68	16.64	20877.	-0.04	-4.	-0.23	-0.21
-20.	400.	1000.	13.57	16.58	20888.	-0.01	-5.	-0.41	-0.04
-20.	400.	1000.	18.47	18.43	21888.	-0.04	-4.	-0.20	-0.23
-20.	450.	1500.	20.84	20.83	29953.	-0.01	-6.	-0.20	-0.04
-20.	450.	1500.	31.79	31.76	31796.	-0.03	-9.	-0.03	-0.06
-20.	500.	1500.	12203.	20.84	12196.	-0.00	-50.	-0.05	-0.29
-20.	500.	1500.	14101.	22.49	13287.	-0.04	-12.	-0.18	-0.36
-20.	550.	1500.	15858.	24.17	14051.	-0.02	-26.	-0.19	-0.15
-30.	300.	1500.	1994.	24.71	15991.	-0.03	-3.	-0.25	-0.00
-30.	350.	1500.	6562.	16.92	15662.	-0.01	-3.	-0.17	-0.04
-30.	350.	1500.	2103.	19.26	21007.	-0.04	-6.	-0.23	-0.12
-30.	400.	1500.	2787.	22.00	2784.	-0.02	-1.	-0.18	-0.01
-30.	450.	1500.	10699.	22.62	10700.	-0.01	-26.	-0.14	-0.21
-30.	500.	1500.	12569.	23.92	12543.	-0.03	-36.	-0.09	-0.23
-30.	550.	1500.	13315.	23.41	13279.	-0.04	-39.	-0.25	-0.05
-30.	550.	1500.	13680.	24.99	13696.	-0.00	-2.	-0.02	-0.05
-40.	300.	1500.	13903.	22.15	13875.	-0.01	-23.	-0.18	-0.04
-40.	350.	1500.	22777.	21.57	22755.	-0.04	-2.	-0.19	-0.10
-40.	400.	1500.	7115.	23.57	7118.	-0.01	-3.	-0.03	-0.09
-40.	450.	1500.	2403.	23.98	2401.	-0.02	-25.	-0.24	-0.06
-40.	500.	1500.	8811.	25.51	8814.	-0.01	-21.	-0.16	-0.20
-40.	550.	1500.	9562.	25.48	9557.	-0.05	-16.	-0.06	-0.18
-40.	550.	1500.	30216.	21.91	30192.	-0.03	-19.	-0.06	-0.16
-40.	550.	1500.	10213.	21.91	10192.	-0.00	-19.	-0.06	-0.16
-40.	550.	1500.	3536.	21.07	3530.	-0.01	-19.	-0.06	-0.16
-40.	550.	1500.	10743.	21.07	10724.	-0.01	-19.	-0.06	-0.16

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WEAPON COEFFICIENTS FOR IDNO 5

CFORM1 = 0.0039077 DKG1 = 0.0063648 DM1 = 0.0 VMUZ = 0.0 DS = 0.0
 CFORM2 = 0.0 DKG2 = 0.0 DM2 = 0.0 FN = 0.0 SL = 0.0
 I TYPE = -1 IREF = 2 OMAX = 3.00 VE = 0.0 DTI = 1.00

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TABLES TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR DIST
10.	300.	500.	8.97	95	0.02	-0.23	-0.55
10.	300.	300.	17.17	17.18	-0.01	-0.41	-0.55
10.	350.	500.	17.61	19.59	0.02	-0.27	-0.54
10.	350.	300.	17.75	17.76	-0.01	-0.43	-0.43
10.	400.	500.	10.23	10.23	0.00	-0.26	-0.37
10.	400.	300.	18.90	18.88	-0.02	-0.37	-0.36
10.	450.	500.	10.91	10.90	0.01	-0.26	-0.23
10.	450.	300.	18.54	11.51	-0.03	-0.26	-0.32
10.	500.	500.	11.47	12.46	0.01	-0.18	-0.14
10.	500.	300.	19.15	19.98	-0.04	-0.37	-0.41
10.	550.	500.	12.00	13.60	0.02	-0.21	-0.15
10.	550.	300.	20.07	5.60	-0.01	-0.39	-0.45
0.	300.	500.	33.69	33.70	0.01	-0.10	-0.33
0.	300.	1500.	33.69	35.60	-0.02	-0.33	-0.50
0.	350.	500.	33.91	35.90	0.01	-0.29	-0.32
0.	350.	1500.	33.70	35.68	-0.02	-0.49	-0.13
0.	400.	500.	34.14	34.12	0.02	-0.23	-0.54
0.	400.	1500.	34.72	35.17	-0.02	-0.40	-0.04
0.	450.	500.	35.39	34.36	0.03	-0.18	-0.65
0.	450.	1500.	35.74	35.71	-0.03	-0.48	-0.01
0.	500.	500.	34.64	34.60	0.04	-0.22	-0.35
0.	500.	1500.	34.76	34.50	-0.03	-0.19	-0.05
0.	550.	500.	34.88	34.85	0.03	-0.34	-0.31
0.	550.	1500.	35.33	35.30	-0.01	-0.31	-0.26
-10.	300.	500.	12.31	13.58	0.02	-0.34	-0.37
-10.	300.	3500.	13.30	14.44	-0.02	-0.51	-0.26
-10.	350.	4500.	14.80	16.08	0.02	-0.49	-0.64
-10.	400.	5500.	16.10	16.52	-0.01	-0.40	-0.15

DEG	TAS	ALT	NAVAIR 01-1C-IT-1 BALLISTICS TABLES TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
-10.	450.	1000.	5.01	4.99	-0.02	-0.33	-0.37
-10.	450.	1500.	18.79	18.12	-0.00	-0.09	-0.09
-10.	450.	2000.	19.67	19.46	-0.01	-0.27	-0.46
-10.	450.	2500.	21.60	21.59	-0.01	-0.07	-0.05
-10.	450.	3000.	24.28	24.17	-0.02	-0.28	-0.64
-20.	350.	1000.	13.95	13.92	-0.00	-0.01	-0.27
-20.	350.	1500.	16.11	16.06	-0.01	-0.08	-0.23
-20.	350.	2000.	18.05	18.06	-0.01	-0.09	-0.20
-20.	350.	2500.	21.89	21.87	-0.01	-0.23	-0.35
-20.	350.	3000.	24.75	24.65	-0.02	-0.29	-0.25
-20.	400.	1000.	19.89	19.87	-0.01	-0.09	-0.02
-20.	400.	1500.	21.67	21.65	-0.01	-0.28	-0.34
-20.	400.	2000.	24.20	24.20	-0.00	-0.10	-0.45
-20.	400.	2500.	27.35	27.34	-0.01	-0.12	-0.11
-20.	400.	3000.	30.45	30.39	-0.02	-0.12	-0.23
-30.	350.	1000.	16.43	16.43	-0.00	-0.08	-0.21
-30.	350.	1500.	19.30	19.30	-0.00	-0.06	-0.18
-30.	350.	2000.	21.40	21.39	-0.01	-0.06	-0.08
-30.	350.	2500.	24.68	24.64	-0.02	-0.11	-0.18
-30.	350.	3000.	27.96	27.94	-0.02	-0.04	-0.18
-30.	400.	1000.	13.30	13.30	-0.00	-0.00	-0.09
-30.	400.	1500.	15.02	15.03	0.01	0.15	-0.27
-30.	400.	2000.	17.22	17.21	-0.01	-0.07	-0.13
-30.	400.	2500.	19.63	19.63	-0.00	-0.00	-0.21
-30.	400.	3000.	22.38	22.37	-0.01	-0.04	-0.15
-40.	350.	1000.	11.59	11.58	-0.01	-0.04	-0.12
-40.	350.	1500.	13.32	13.31	-0.01	-0.05	-0.13
-40.	350.	2000.	15.01	15.01	-0.01	-0.03	-0.13
-40.	350.	2500.	16.65	16.66	0.01	0.10	-0.12
-40.	350.	3000.	18.23	18.22	-0.01	-0.13	-0.12
-40.	400.	1000.	10.55	10.55	-0.01	-0.10	-0.13
-40.	400.	1500.	12.15	12.15	-0.01	-0.13	-0.12

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WEAPON COEFFICIENTS FOR IDNO 6

CFORM1 = 0.0
CFORM2 = 0.0
ITYPE = -1
IBOTH = 1
DKG1 = 0.0212660
DKG2 = 0.0
IREF = 4
DMAX = 2.00
DM1 = 0.0
DM2 = 0.0
VE = 0.0
DT1 = 1.00

VMUZ = 0.0
FN = 0.0
DS = 0.0
SL = 0.0

NAVAIR 01-1C-1T-1 BALLISTICS TABLES

NPS MODIFIED BOEING ALGORITHM

DEG	TAS	ALT	TIME	TIME	TIME	DIFFERENCES TIME	DIST	PER CENT TIME	ERROR DIST
0.	300.	500.	6.02	2382.	5.69	-0.33	309.	-5.40	12.98
0.	300.	1500.	10.91	3714.	10.03	-0.88	807.	-8.07	21.72
0.	350.	500.	6.08	2711.	5.71	-0.37	405.	-6.03	14.93
0.	350.	2000.	12.94	4642.	11.72	-1.22	1302.	-9.46	28.06
0.	400.	500.	6.13	3023.	5.73	-0.40	534.	-6.50	16.90
0.	400.	2000.	13.08	5106.	11.75	-1.30	1598.	-9.55	31.81
0.	450.	500.	6.18	3321.	5.75	-0.43	625.	-6.97	18.81
0.	450.	2000.	14.97	5972.	13.32	-1.65	2246.	-11.00	37.60
0.	500.	500.	6.23	3606.	5.77	-0.46	745.	-11.29	20.67
0.	500.	2000.	15.10	6397.	13.40	-1.70	2607.	-11.75	40.75
0.	550.	500.	6.25	3879.	5.78	-0.49	872.	-11.52	22.47
0.	550.	2000.	15.22	6393.	13.47	-1.75	3375.	-11.75	52.79
0.	600.	500.	6.25	1621.	5.57	-0.28	80.	-11.33	4.96
10.	300.	500.	12.18	3911.	10.64	-1.54	771.	-12.64	19.71
10.	350.	500.	13.65	1761.	11.33	-1.31	86.	-14.61	4.07
10.	400.	500.	13.44	1881.	11.66	-1.32	1128.	-14.33	24.68
10.	450.	500.	13.53	5100.	11.39	-1.32	1307.	-15.38	25.62
10.	500.	500.	14.58	3131.	11.06	-2.77	1327.	-17.20	30.96
10.	550.	500.	15.97	5843.	12.35	-2.62	1751.	-17.40	42.26
10.	600.	500.	16.57	3309.	13.84	-3.10	2345.	-18.94	54.56
10.	650.	500.	17.37	6555.	14.27	-3.10	2246.	-18.55	42.26
10.	700.	500.	18.48	3469.	14.63	-3.85	2783.	-20.98	63.45
10.	750.	500.	19.73	7239.	14.14	-3.59	2783.	-20.98	63.45
10.	800.	500.	21.80	1356.	14.32	-4.48	724.	-16.01	18.51
20.	300.	500.	13.23	3909.	11.11	-2.19	983.	-11.34	21.59
20.	350.	500.	14.43	1985.	11.96	-2.62	983.	-11.34	21.59
20.	400.	500.	14.31	4572.	11.69	-2.50	1275.	-12.15	24.44
20.	450.	500.	15.15	2090.	13.65	-3.15			
20.	500.	500.	15.18	5218.	12.23				

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR
-45:	550:	4500:	9:14	6:70	3838:	-26:69	8:98
-45:	550:	15000:	31:86	20:32	9702:	-36:22	41:14
-60:	300:	4000:	39:56	7:77	1785:	-18:73	8:18
-60:	300:	15000:	33:56	23:24	4555:	-30:74	36:81
-60:	350:	4000:	8:79	7:03	1880:	-20:02	37:30
-60:	350:	15000:	32:52	22:00	4986:	-32:34	36:61
-60:	400:	4000:	10:31	7:89	2355:	-23:52	36:33
-60:	400:	15000:	31:56	20:70	5363:	-23:50	36:22
-60:	450:	4500:	10:77	19:95	2639:	-26:17	35:86
-60:	450:	15000:	30:68	18:81	5691:	-35:44	35:66
-60:	500:	4500:	12:28	18:66	3125:	-29:89	11:90
-60:	500:	15000:	29:85	18:84	5978:	-36:89	34:45
-60:	550:	4500:	12:71	17:70	3413:	-31:52	12:45
-60:	550:	15000:	29:08	17:94	6230:	-38:30	34:21

CCFORM1 = 2.5703993	DKG1 = 0.0	DM1 = 0.0	VMUZ = 0.	DS = 0.0
CCFORM2 = 0.0	DKG2 = 0.0	DM2 = 0.0	FN = 0.	SL = 0.0
IITYPE = -1	IREF = 1	VE = 0.0		
IIBOTH = 1	DMAX = 5.00	DTI = 3.00		

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DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TIME	BOEING ALGORITHM TIME	NPS MODIFIED DIST	DIFFERENCES TIME	DIFFERENCES DIST	PER CENT TIME	PER CENT ERROR	DIST
-10.	450.	1000.	4.86	4.82	3546.	04	5.	-0.76	-0.14	14
-10.	450.	7500.	18.55	18.37	12960.	-0.18	124.	-0.91	-0.97	19
-10.	500.	1000.	4.63	4.59	13744.	-0.04	173.	-0.91	-0.12	12
-10.	500.	9000.	20.41	20.18	15652.	-0.23	170.	-1.13	-0.24	24
-10.	550.	1000.	4.88	4.82	3918.	-0.06	226.	-1.13	-0.21	21
-10.	550.	11000.	22.74	22.62	18850.	-0.12	30.	-0.49	-0.47	47
-20.	300.	1500.	14.22	14.12	2682.	-0.10	30.	-0.69	-0.47	47
-20.	300.	5500.	15.31	15.28	6496.	-0.03	1.	-0.52	-0.44	44
-20.	350.	1500.	16.74	16.59	2890.	-0.15	55.	-0.90	-0.63	63
-20.	350.	7500.	18.93	18.79	8812.	-0.14	87.	-0.65	-0.66	66
-20.	400.	1500.	4.89	4.90	3060.	-0.01	87.	-0.73	-0.78	78
-20.	400.	9500.	18.81	18.56	1238.	-0.25	124.	-1.19	-0.91	11
-20.	450.	1500.	20.24	20.56	13767.	-0.32	164.	-1.66	-0.99	17
-20.	450.	11500.	23.24	22.95	3316.	-0.29	164.	-1.28	-0.99	17
-20.	500.	14000.	24.08	23.09	16730.	-0.99	199.	-1.38	-0.09	09
-20.	550.	15000.	24.64	23.75	4349.	-0.89	199.	-1.51	-0.05	05
-30.	300.	1500.	4.95	4.62	2003.	-0.33	38.	-0.85	-0.54	54
-30.	300.	8500.	16.34	16.81	7079.	-0.47	38.	-0.51	-0.09	09
-30.	350.	2000.	19.37	19.31	2655.	-0.06	65.	-0.67	-0.66	66
-30.	400.	12000.	22.39	22.87	2803.	-0.48	97.	-1.24	-0.80	80
-30.	400.	14500.	24.51	24.18	12144.	-0.33	107.	-1.65	-0.81	81
-30.	450.	15000.	25.09	24.88	13398.	-0.21	114.	-1.28	-0.81	81
-30.	500.	15000.	25.55	25.05	36269.	-0.50	129.	-1.39	-0.80	80
-30.	550.	15000.	26.75	26.77	13711.	-0.02	129.	-1.56	-0.87	87
-40.	300.	15000.	21.03	20.77	14980.	-0.26	50.	-1.50	-0.87	87
-40.	300.	13500.	21.45	21.00	2293.	-0.45	63.	-1.54	-0.64	64
-40.	350.	15000.	25.92	25.42	7817.	-0.50	68.	-1.66	-0.61	61
-40.	400.	15000.	28.06	28.67	9267.	-0.61	68.	-1.27	-0.68	68
-40.	450.	15000.	30.37	30.67	10067.	-0.30	69.	-1.36	-0.62	62
-40.	500.	15000.	32.99	32.31	3035.	-0.68	69.	-1.36	-0.62	62
-40.	550.	15000.	35.37	35.80	10768.	-0.43	72.	-1.45	-0.64	64
-40.	550.	15000.	37.68	37.06	3566.	-0.62	72.	-1.45	-0.64	64
-40.	550.	15000.	39.99	39.31	11371.	-0.68	72.	-1.45	-0.64	64
-40.	550.	15000.	42.36	41.63	11371.	-0.73	72.	-1.45	-0.64	64
-40.	550.	15000.	44.78	44.03	11371.	-0.75	72.	-1.45	-0.64	64
-40.	550.	15000.	47.15	46.38	11371.	-0.77	72.	-1.45	-0.64	64
-40.	550.	15000.	49.52	48.67	11371.	-0.85	72.	-1.45	-0.64	64
-40.	550.	15000.	51.84	50.91	11371.	-0.93	72.	-1.45	-0.64	64
-40.	550.	15000.	54.15	53.13	11371.	-1.02	72.	-1.45	-0.64	64
-40.	550.	15000.	56.45	55.34	11371.	-1.10	72.	-1.45	-0.64	64
-40.	550.	15000.	58.74	57.53	11371.	-1.21	72.	-1.45	-0.64	64
-40.	550.	15000.	61.02	59.71	11371.	-1.31	72.	-1.45	-0.64	64
-40.	550.	15000.	63.29	61.88	11371.	-1.41	72.	-1.45	-0.64	64
-40.	550.	15000.	65.55	64.04	11371.	-1.51	72.	-1.45	-0.64	64
-40.	550.	15000.	67.81	66.20	11371.	-1.61	72.	-1.45	-0.64	64
-40.	550.	15000.	70.06	68.35	11371.	-1.71	72.	-1.45	-0.64	64
-40.	550.	15000.	72.31	70.50	11371.	-1.81	72.	-1.45	-0.64	64
-40.	550.	15000.	74.56	72.65	11371.	-1.91	72.	-1.45	-0.64	64
-40.	550.	15000.	76.81	74.80	11371.	-2.01	72.	-1.45	-0.64	64
-40.	550.	15000.	79.06	76.95	11371.	-2.11	72.	-1.45	-0.64	64
-40.	550.	15000.	81.31	78.80	11371.	-2.21	72.	-1.45	-0.64	64
-40.	550.	15000.	83.56	80.89	11371.	-2.31	72.	-1.45	-0.64	64
-40.	550.	15000.	85.81	83.12	11371.	-2.41	72.	-1.45	-0.64	64
-40.	550.	15000.	88.06	85.37	11371.	-2.51	72.	-1.45	-0.64	64
-40.	550.	15000.	90.31	87.62	11371.	-2.61	72.	-1.45	-0.64	64
-40.	550.	15000.	92.56	89.87	11371.	-2.71	72.	-1.45	-0.64	64
-40.	550.	15000.	94.81	92.18	11371.	-2.81	72.	-1.45	-0.64	64
-40.	550.	15000.	97.06	94.49	11371.	-2.91	72.	-1.45	-0.64	64
-40.	550.	15000.	99.31	96.80	11371.	-3.01	72.	-1.45	-0.64	64
-40.	550.	15000.	101.56	99.29	11371.	-3.11	72.	-1.45	-0.64	64
-40.	550.	15000.	103.81	101.78	11371.	-3.21	72.	-1.45	-0.64	64
-40.	550.	15000.	106.06	103.91	11371.	-3.31	72.	-1.45	-0.64	64
-40.	550.	15000.	108.31	106.14	11371.	-3.41	72.	-1.45	-0.64	64
-40.	550.	15000.	110.56	108.37	11371.	-3.51	72.	-1.45	-0.64	64
-40.	550.	15000.	112.81	110.58	11371.	-3.61	72.	-1.45	-0.64	64
-40.	550.	15000.	115.06	112.79	11371.	-3.71	72.	-1.45	-0.64	64
-40.	550.	15000.	117.31	114.99	11371.	-3.81	72.	-1.45	-0.64	64
-40.	550.	15000.	119.56	117.18	11371.	-3.91	72.	-1.45	-0.64	64
-40.	550.	15000.	121.81	119.37	11371.	-4.01	72.	-1.45	-0.64	64
-40.	550.	15000.	124.06	121.56	11371.	-4.11	72.	-1.45	-0.64	64
-40.	550.	15000.	126.31	123.75	11371.	-4.21	72.	-1.45	-0.64	64
-40.	550.	15000.	128.56	125.94	11371.	-4.31	72.	-1.45	-0.64	64
-40.	550.	15000.	130.81	128.13	11371.	-4.41	72.	-1.45	-0.64	64
-40.	550.	15000.	133.06	130.32	11371.	-4.51	72.	-1.45	-0.64	64
-40.	550.	15000.	135.31	132.51	11371.	-4.61	72.	-1.45	-0.64	64
-40.	550.	15000.	137.56	134.70	11371.	-4.71	72.	-1.45	-0.64	64
-40.	550.	15000.	139.81	136.89	11371.	-4.81	72.	-1.45	-0.64	64
-40.	550.	15000.	142.06	139.08	11371.	-4.91	72.	-1.45	-0.64	64
-40.	550.	15000.	144.31	141.27	11371.	-5.01	72.	-1.45	-0.64	64
-40.	550.	15000.	146.56	143.46	11371.	-5.11	72.	-1.45	-0.64	64
-40.	550.	15000.	148.81	145.65	11371.	-5.21	72.	-1.45	-0.64	64
-40.	550.	15000.	151.06	147.84	11371.	-5.31	72.	-1.45	-0.64	64
-40.	550.	15000.	153.31	150.03	11371.	-5.41	72.	-1.45	-0.64	64
-40.	550.	15000.	155.56	152.22	11371.	-5.51	72.	-1.45	-0.64	64
-40.	550.	15000.	157.81	154.41	11371.	-5.61	72.	-1.45	-0.64	64
-40.	550.	15000.	160.06	156.60	11371.	-5.71	72.	-1.45	-0.64	64
-40.	550.	15000.	162.31	158.79	11371.	-5.81	72.	-1.45	-0.64	64
-40.	550.	15000.	164.56	160.98	11371.	-5.91	72.	-1.45	-0.64	64
-40.	550.	15000.	166.81	163.17	11371.	-6.01	72.	-1.45	-0.64	64
-40.	550.	15000.	169.06	165.36	11371.	-6.11	72.	-1.45	-0.64	64
-40.	550.	15000.	171.31	167.55	11371.	-6.21	72.	-1.45	-0.64	64
-40.	550.	15000.	173.56	169.74	11371.	-6.31	72.	-1.45	-0.64	64
-40.	550.	15000.	175.81	171.93	11371.	-6.41	72.	-1.45	-0.64	64
-40.	550.	15000.	178.06	174.12	11371.	-6.51	72.	-1.45	-0.64	64
-40.	550.	15000.	180.31	176.31	11371.	-6.61	72.	-1.45	-0.64	64
-40.	550.	15000.	182.56	178.50	11371.	-6.71	72.	-1.45	-0.64	64
-40.	550.	15000.	184.81	180.69	11371.	-6.81	72.	-1.45	-0.64	64
-40.	550.	15000.	187.06	182.88	11371.	-6.91	72.	-1.45	-0.64	64
-40.	550.	15000.	189.31	185.07	11371.	-7.01	72.	-1.45	-0.64	64
-40.	550.	15000.	191.56	187.26	11371.	-7.11	72.	-1.45	-0.64	64
-40.	550.	15000.	193.81	189.45	11371.	-7.21	72.	-1.45	-0.64	64
-40.	550.	15000.	196.06	191.64	11371.	-7.31	72.	-1.45	-0.64	64
-40.	550.	15000.	198.31	193.83	11371.	-7.41	72.	-1.45	-0.64	64
-40.	550.	15000.	200.56	196.02	11371.	-7.51	72.	-1.45	-0.64	64
-40.	550.	15000.	202.81	198.21	11371.	-7.61	72.	-1.45	-0.64	64
-40.	550.	15000.	205.06	200.40	11371.	-7.71	72.	-1.45	-0.64	64
-40.	550.	15000.	207.31	202.59	11371.	-7.81	72.	-1.45	-0.64	64
-40.	550.	15000.	209.56	204.78	11371.	-7.91	72.	-1.45	-0.64	64
-40.	550.	15000.	211.81	206.97	11371.	-8.01	72.	-1.45	-0.64	64
-40.	550.	15000.	214.06	209.16	11371.	-8.11	72.	-1.45	-0.64	64
-40.	550.	15000.	216.31	211.35	11371.	-8.21	72.	-1.45	-0.64	64
-40.	550.	15000.	218.56	213.54	11371.	-8.31	72.	-1.45	-0.64	64
-40.	550.	15000.	220.81	215.73	11371.	-8.41	72.	-1.45	-0.64	64
-40.	550.	15000.	223.06	217.92	11371.	-8.51	72.	-1.45	-0.64	64
-40.	550.	15000.	225.31	220.11	11371.	-8.61	72.	-1.45	-0.64	64
-40.	550.	15000.	227.56	222.30	11371.	-8.71	72.	-1.45	-0.64	64
-40.	550.	15000.	229.81	224.49	11371.	-8.81	72.	-1.45	-0.64	64
-40.	550.	15000.	232.06	226.68	11371.	-8.91	72.	-1.45	-0.64	64
-40.	550.	15000.	234.31	228.87	11371.	-9.01	72.	-1.45	-0.64	64
-40.	550.	15000.	236.56	231.06	11371.	-9.11	72.	-1.45	-0.64	64
-4										

WEAPON COEFFICIENTS FOR IDNO 8

CFORM1 = 0.0
 CFORM2 = 0.0
 ITYPE = -1
 IBOTH = 1
 DKG1 = 0.0097670
 DKG2 = 0.0
 IREF = 4
 DMAX = 3.00
 DM1 = 0.0
 DM2 = 0.0
 VE = 0.0
 DTI = 2.00
 VMUZ = 0.
 FN = 0.
 DS = 0.0
 SL = 0.0

DEG	TAS	ALT	NAVAIR 01-1C-11-1 BALLISTICS TABLES TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
10.	300.	500.	8.96	8.94	-0.02	-0.08	-0.08
10.	300.	3000.	16.99	16.97	-0.02	-0.08	-0.08
10.	350.	3000.	19.61	19.59	-0.02	-0.08	-0.08
10.	350.	3000.	17.56	17.55	-0.01	-0.08	-0.08
10.	400.	3000.	10.28	10.26	-0.02	-0.09	-0.09
10.	400.	3000.	18.14	18.13	-0.01	-0.09	-0.09
10.	450.	3000.	10.95	10.93	-0.02	-0.12	-0.12
10.	450.	3000.	18.73	18.71	-0.02	-0.12	-0.12
10.	450.	3000.	11.64	11.61	-0.03	-0.13	-0.13
10.	500.	3000.	19.31	19.29	-0.02	-0.14	-0.14
10.	500.	3000.	12.33	12.30	-0.03	-0.14	-0.14
10.	550.	3000.	19.90	19.88	-0.02	-0.17	-0.17
10.	550.	3000.	15.30	15.28	-0.02	-0.17	-0.17
0.	300.	15000.	14.13	14.12	-0.01	-0.10	-0.10
0.	350.	15000.	32.46	32.42	-0.04	-0.11	-0.11
0.	350.	15000.	8.02	8.01	-0.01	-0.12	-0.12
0.	400.	15000.	32.59	32.56	-0.03	-0.16	-0.16
0.	400.	15000.	8.73	8.69	-0.04	-0.16	-0.16
0.	450.	15000.	32.06	32.04	-0.02	-0.20	-0.20
0.	450.	15000.	8.07	8.04	-0.03	-0.22	-0.22
0.	500.	15000.	32.08	32.03	-0.05	-0.27	-0.27
0.	500.	15000.	8.01	8.00	-0.01	-0.27	-0.27
0.	550.	15000.	33.15	33.06	-0.09	-0.42	-0.42
0.	550.	15000.	5.68	5.66	-0.02	-0.42	-0.42
0.	300.	15000.	33.71	33.71	0.00	-0.13	-0.13
0.	350.	15000.	12.68	12.64	-0.04	-0.06	-0.06
0.	350.	15000.	14.43	14.42	-0.01	-0.09	-0.09
0.	400.	15000.	15.16	15.15	-0.01	-0.12	-0.12
0.	400.	15000.	15.89	15.88	-0.01	-0.06	-0.06
-10.	300.	6000.	16.89	16.88	-0.01	-0.07	-0.07
-10.	350.	6000.	16.89	16.88	-0.01	-0.07	-0.07
-10.	350.	6000.	16.89	16.88	-0.01	-0.07	-0.07
-10.	400.	6000.	16.89	16.88	-0.01	-0.07	-0.07

[illegible]

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TABLES TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR DIST
-40.	550.	4000.	6:10	6:09	0:01	0:11	0:09
-40.	550.	1500.	19:09	19:08	0:00	0:07	0:04
-45.	300.	1500.	5:04	5:73	0:00	0:07	0:07
-45.	350.	1500.	23:05	23:02	0:02	0:10	0:05
-45.	350.	1500.	21:51	21:89	0:00	0:05	0:06
-45.	400.	1500.	5:86	5:54	0:02	0:10	0:04
-45.	450.	1500.	20:58	20:51	0:02	0:10	0:08
-45.	450.	1500.	19:07	19:07	0:00	0:09	0:07
-45.	500.	1500.	6:30	6:29	0:00	0:03	0:05
-45.	550.	1500.	18:37	18:35	0:02	0:03	0:08
-45.	550.	1500.	17:47	17:45	0:02	0:05	0:05
-60.	300.	1500.	13:37	13:35	0:02	0:14	0:05
-60.	350.	1500.	21:48	21:46	0:02	0:15	0:03
-60.	400.	1500.	6:10	6:08	0:02	0:10	0:03
-60.	450.	1500.	18:49	18:47	0:02	0:06	0:04
-60.	500.	1500.	17:48	17:46	0:02	0:07	0:05
-60.	550.	1500.	16:07	16:06	0:01	0:03	0:04
-60.	550.	1500.	16:01	16:00	0:01	0:09	0:06
-60.	550.	1500.	6:50	6:49	0:01	0:09	0:03

WEAPON COEFFICIENTS FOR IDNO 9

CFORM1 = 2.0639992 DKG1 = 0.0 DM1 = 0.0 VMUZ = 0.0 DS = 0.0
 CFORM2 = 0.0 DKG2 = 0.0 DM2 = 0.0 FN = 0.0 SL = 0.0
 ITYPE = -1 IREF = 1 VE = 0.0
 IBOOTH = 1 DMAX = 5.00 DTI = 3.00

DEG	TAS	ALT	NAVAIR 01-1C-11-1 BALLISTICS TABLES TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR
10.	300.	500.	8.95	8.93	0.02	0.06	0.18
10.	300.	3000.	16.77	16.76	0.01	0.07	0.07
10.	350.	500.	19.61	19.59	0.02	0.18	0.20
10.	350.	3000.	17.34	17.32	0.02	0.11	0.08
10.	400.	500.	10.30	10.27	0.03	0.25	0.29
10.	400.	3000.	17.91	17.89	0.02	0.25	0.23
10.	450.	500.	11.00	11.00	0.00	0.28	0.09
10.	450.	3000.	18.49	18.47	0.02	0.27	0.23
10.	450.	500.	11.72	11.69	0.03	0.27	0.23
10.	500.	3000.	19.09	19.07	0.02	0.27	0.23
10.	550.	500.	12.45	12.42	0.03	0.36	0.43
10.	550.	3000.	19.69	19.67	0.02	0.36	0.43
10.	600.	500.	13.16	13.15	0.01	0.52	0.71
10.	600.	3000.	20.28	20.25	0.03	0.52	0.71
10.	650.	500.	13.80	13.78	0.02	0.52	0.71
10.	650.	3000.	20.83	20.78	0.05	0.52	0.71
10.	300.	15000.	9.72	9.71	0.01	0.97	1.16
0.	300.	15000.	31.20	31.17	0.03	0.97	1.16
0.	350.	15000.	31.93	31.92	0.01	0.97	1.16
0.	350.	15000.	37.27	37.23	0.04	1.24	1.69
0.	400.	15000.	37.35	37.31	0.04	1.24	1.69
0.	400.	15000.	37.94	37.93	0.01	1.18	1.69
0.	450.	15000.	31.47	31.43	0.04	1.18	1.69
0.	450.	15000.	37.95	37.93	0.02	1.25	1.69
0.	500.	15000.	37.64	37.61	0.03	1.20	1.69
0.	550.	15000.	31.96	31.93	0.03	1.30	1.69
0.	550.	15000.	37.90	37.87	0.03	1.30	1.69
0.	600.	15000.	37.97	37.95	0.02	1.30	1.69
0.	600.	15000.	32.21	32.17	0.04	1.30	1.69

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
00	650	500	5948	5858	00	102	1051
10	650	1500	29805	29767	00	115	0018
10	300	1000	3041	3071	00	014	0006
10	350	1000	8423	8418	00	11	0006
10	400	1000	3335	3327	00	027	0028
10	450	1000	10924	10917	00	029	0006
10	500	1000	3564	3556	00	043	0033
10	550	1000	13764	13756	00	129	0006
10	600	1500	16272	16263	00	123	0036
10	650	1500	19500	19484	00	226	0072
10	700	1500	5563	5543	00	223	0018
10	750	1500	25761	25719	00	207	0005
20	300	1500	24337	24292	00	120	0004
20	350	1500	2689	2686	00	122	0016
20	400	1500	6520	6517	00	117	0020
20	450	1500	2898	2894	00	122	0007
20	500	1500	3069	3064	00	111	0008
20	550	1000	11668	11663	00	110	0017
20	600	12000	14226	14220	00	090	0006
20	650	12000	17363	17355	00	020	0023
20	700	1500	18646	18637	00	060	0056
20	750	1500	19492	19467	00	059	0010
20	800	1500	4579	4553	00	010	0004
20	850	1500	20179	20142	00	013	0012
20	900	1500	7375	7365	00	010	0004
20	950	1500	2869	2865	00	026	0014
30	400	1500	12482	12476	00	011	0005

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TABLES TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
-30.	450.	2500.	5.43	5.42	-0.01	0.15	0.11
-30.	450.	1500.	21.75	21.73	-0.02	0.11	-0.05
-30.	450.	1500.	21.05	21.07	0.02	0.29	-0.14
-30.	450.	1500.	21.10	21.07	-0.03	0.12	-0.04
-30.	450.	1500.	21.71	21.69	0.02	0.35	-0.14
-30.	450.	1500.	20.59	20.58	-0.01	0.37	-0.07
-30.	450.	1500.	20.22	20.20	0.02	0.38	-0.10
-30.	450.	1500.	20.71	20.71	0.00	0.07	-0.33
-30.	450.	1500.	19.99	19.89	0.10	0.07	-0.10
-30.	450.	1500.	19.99	19.89	0.10	0.07	-0.10
-40.	300.	2500.	5.60	5.58	0.02	0.09	-0.08
-40.	300.	1500.	21.60	21.58	0.02	0.09	-0.04
-40.	300.	1500.	21.45	21.42	0.03	0.12	-0.11
-40.	300.	1500.	21.78	21.77	0.01	0.24	-0.04
-40.	300.	1500.	20.56	20.53	0.03	0.14	-0.10
-40.	300.	1500.	20.31	20.30	0.01	0.23	-0.04
-40.	300.	1500.	19.62	19.61	0.01	0.23	-0.10
-40.	300.	1500.	18.92	18.90	0.02	0.09	-0.09
-40.	300.	1500.	18.91	18.89	0.02	0.11	-0.08
-40.	300.	1500.	18.32	18.30	0.02	0.35	-0.06
-40.	300.	1500.	17.85	17.84	0.01	0.06	-0.10
-40.	300.	1500.	17.51	17.50	0.01	0.20	-0.11
-40.	300.	1500.	17.46	17.43	0.03	0.20	-0.07
-45.	300.	1500.	15.93	15.91	0.02	0.08	-0.08
-45.	300.	1500.	15.92	15.91	0.01	0.08	-0.07
-45.	300.	1500.	15.79	15.77	0.02	0.11	-0.03
-45.	300.	1500.	15.39	15.38	0.01	0.17	-0.04
-45.	300.	1500.	15.66	15.65	0.01	0.17	-0.09
-45.	300.	1500.	15.89	15.88	0.01	0.14	-0.03
-45.	300.	1500.	18.04	18.02	0.02	0.19	-0.06
-45.	300.	1500.	18.10	18.08	0.02	0.28	-0.05
-45.	300.	1500.	17.41	17.39	0.02	0.11	-0.06
-45.	300.	1500.	16.91	16.89	0.02	0.30	-0.07
-45.	300.	1500.	16.91	16.90	0.01	0.06	-0.11

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TABLES TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
-45.	650.	6000.	7.15	7.14	-0.01	-0.12	-0.18
-45.	650.	15000.	16.49	16.45	-0.04	-0.23	-0.05
-60.	300.	15000.	7.33	7.29	-0.04	-0.16	-0.03
-60.	300.	15000.	20.33	20.31	-0.02	-0.09	-0.03
-60.	350.	15000.	6.57	6.56	-0.01	-0.08	-0.03
-60.	350.	15000.	19.07	19.05	-0.02	-0.12	-0.04
-60.	400.	15000.	17.26	17.25	-0.01	-0.13	-0.03
-60.	400.	15000.	17.94	17.92	-0.02	-0.08	-0.04
-60.	450.	15000.	17.24	17.23	-0.01	-0.15	-0.03
-60.	450.	15000.	16.77	16.76	-0.01	-0.11	-0.06
-60.	500.	15000.	17.11	17.09	-0.02	-0.15	-0.03
-60.	500.	15000.	16.77	16.75	-0.02	-0.22	-0.06
-60.	550.	15000.	15.43	15.41	-0.02	-0.24	-0.05
-60.	550.	15000.	18.89	18.87	-0.02	-0.26	-0.07
-60.	600.	15000.	14.38	14.36	-0.02	-0.20	-0.10
-60.	650.	15000.	14.40	14.36	-0.04	-0.31	-0.05

WEAPON COEFFICIENTS FOR IDNO 10

CFORM1 = 1.4931993 DKG1 = 0.0 DM1 = 0.0 VMUZ = 0.0 DS = 0.0
 CFORM2 = 0.0 DKG2 = 0.0 DM2 = 0.0 FN = 0.0 SL = 0.0
 ITYPE = -1 IREF = 1 VE = 0.0
 IBOTH = 1 DMAX = 5.00 DTI = 3.00

DEG	TAS	ALT	NAVAIR 01-1C-17-1 BALLISTICS	TIME	NPS MODIFIED BOEING ALGORITHM	DIST	DIFFERENCES TIME	DIST	PER CENT TIME	ERROR DIST
10.	300.	500.	8.95	4387.	4401.	0.02	14.	17	329	0.59
10.	350.	3000.	16.77	8114.	8162.	-0.04	148.	12	0.22	0.43
10.	350.	500.	19.60	5475.	5499.	-0.01	24.	13	0.28	0.74
10.	350.	3000.	17.34	9728.	9800.	-0.05	272.	28	0.27	0.57
10.	400.	500.	10.30	6672.	6710.	-0.02	38.	17	0.21	0.88
10.	450.	3000.	17.91	11418.	11519.	-0.05	101.	13	0.35	0.72
10.	450.	500.	11.00	13182.	13327.	-0.01	138.	5	0.25	0.90
10.	450.	3000.	11.49	15019.	15203.	-0.05	138.	5	0.22	1.22
10.	500.	500.	11.72	10911.	11031.	-0.01	184.	20	0.27	1.1
10.	550.	3000.	19.05	16927.	17103.	-0.05	184.	20	0.26	1.25
10.	550.	500.	12.45	12452.	12608.	-0.01	230.	7	0.23	1.41
10.	600.	3000.	13.68	18765.	19036.	-0.05	236.	3	0.22	1.58
10.	650.	500.	20.80	13803.	14037.	-0.04	241.	10	0.10	1.6
10.	650.	3000.	20.72	20265.	20684.	-0.02	241.	10	0.03	1.2
0.	300.	15000.	31.20	4830.	4843.	-0.03	113.	18	0.28	0.26
0.	350.	15000.	31.23	15004.	15121.	-0.02	117.	4	0.24	0.78
0.	400.	15000.	31.27	17437.	17592.	-0.02	151.	8	0.27	0.18
0.	450.	15000.	31.29	15253.	15264.	-0.03	151.	8	0.36	0.89
0.	450.	15000.	31.34	19848.	20044.	-0.02	196.	3	0.37	0.29
0.	500.	15000.	31.47	15899.	15914.	-0.03	241.	29	0.32	0.55
0.	550.	15000.	31.47	2231.	22472.	-0.02	241.	29	0.37	0.29
0.	550.	15000.	31.95	6544.	6565.	-0.03	241.	29	0.42	1.1
0.	600.	15000.	31.64	24564.	24720.	-0.06	241.	29	0.49	1.3
0.	600.	15000.	31.96	27186.	27207.	-0.02	241.	29	0.48	1.0
0.	600.	15000.	31.90	26725.	27077.	-0.04	352.	8	0.48	1.3
0.	600.	15000.	31.97	27795.	27817.	-0.04	488.	9	0.48	1.0
0.	600.	15000.	32.21	28435.	28923.	-0.30	488.	9	0.52	1.2

DEG	TAS	ALT	NAVAIR 01-1C-11-1 BALLISTICS TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT DIST	ERROR DIST
0	650	500	5948	59	06	108	33	33
0	650	1500	29805	32	031	10944	2	140
-10	300	1000	2785	563	002	2785	0	0
-10	350	1000	6041	12	005	3077	0	31
-10	350	1000	3077	36	001	3077	0	01
-10	350	1000	8423	14	008	8459	0	43
-10	400	1000	3335	506	002	3334	0	02
-10	450	1000	10924	17	010	10984	0	57
-10	450	1000	3563	01	013	3561	0	66
-10	450	1000	13544	18	017	13634	0	16
-10	500	1000	3764	488	003	3760	0	75
-10	500	1000	16272	20	017	16396	0	91
-10	550	1000	5325	59	022	5322	0	00
-10	550	1000	19500	22	004	19563	0	00
-10	600	1000	5563	569	028	5560	0	28
-10	650	1000	2020	24	035	2021	0	140
-10	650	1000	5761	66	025	5753	0	140
-20	300	1500	24337	51	007	24389	0	01
-20	300	1500	2689	40	027	26840	0	31
-20	350	1500	6520	14	001	6540	0	01
-20	350	1500	2852	26	020	2898	0	42
-20	400	1500	3069	43	010	3068	0	53
-20	450	1000	13211	19	024	13209	0	06
-20	450	1000	14217	44	018	14217	0	61
-20	500	1000	17580	20	035	17708	0	73
-20	550	1000	17363	38	023	17362	0	02
-20	550	1000	18646	06	029	18805	0	85
-20	600	1000	19492	23	034	19705	0	09
-20	650	1000	4579	22	045	4570	0	247
-30	300	1500	20179	56	022	20476	0	01
-30	300	1500	7375	74	011	7402	0	37
-30	350	1500	2685	81	012	26815	0	01
-30	400	1500	2810	29	025	2809	0	403
-30	400	1500	12482	31	020	12549	0	53

DEG	TAS	ALT	NAVAIR BALLISTICS TIME	01-1C-1T-1 TABLES DIST	NPS BOEING TIME	MODIFIED ALGORITHM DIST	DIFFERENCES TIME	DIST	PER CENT TIME	ERROR DIST
-30.	450.	2500.	5.43	3517.	5.41	3517.	-0.02	0.	45	0.01
-30.	450.	2500.	21.75	13474.	21.53	13547.	-0.22	73.	-0.54	0.54
-30.	500.	1500.	21.05	136229.	20.86	136228.	-0.03	-1.	-0.60	0.02
-30.	500.	1500.	21.11	14351.	20.46	143719.	-0.24	83.	-0.58	0.58
-30.	550.	1500.	20.52	15082.	20.31	151852.	-0.23	-1.	-0.68	0.02
-30.	550.	1500.	20.52	14452.	20.51	14452.	-0.05	103.	-0.35	0.68
-30.	600.	1500.	20.21	15662.	19.87	15798.	-0.34	136.	-0.93	0.00
-30.	600.	1500.	20.21	15134.	19.65	15180.	-0.06	136.	-0.87	0.87
-30.	650.	1500.	19.99	16134.	19.46	163397.	-0.45	198.	-0.23	0.23
-40.	300.	1400.	5.99	8040.	5.97	8040.	-0.02	0.	-0.02	0.02
-40.	300.	1400.	21.60	2422.	21.44	2422.	-0.16	35.	-0.74	0.43
-40.	350.	1500.	21.60	2913.	21.37	2913.	-0.23	42.	-0.86	0.43
-40.	350.	1500.	21.55	2943.	21.37	2943.	-0.18	42.	-0.86	0.43
-40.	400.	1500.	21.55	10114.	20.37	10158.	-0.19	44.	-0.94	0.45
-40.	400.	1500.	20.56	3041.	20.28	3041.	-0.28	48.	-0.94	0.44
-40.	450.	1500.	19.62	10818.	19.59	10866.	-0.20	48.	-0.94	0.44
-40.	450.	1500.	19.62	3572.	19.55	3573.	-0.03	48.	-0.94	0.44
-40.	500.	1500.	18.91	11409.	18.87	11410.	-0.01	53.	-0.46	0.02
-40.	550.	1500.	18.32	11922.	18.05	11987.	-0.27	63.	-0.75	0.45
-40.	550.	1500.	17.28	14645.	17.13	14648.	-0.03	86.	-0.55	0.55
-40.	600.	1500.	17.51	12315.	17.42	12401.	-0.07	86.	-0.70	0.60
-40.	650.	1500.	17.46	12636.	17.01	12764.	-0.45	128.	-0.06	0.06
-45.	300.	1500.	17.63	19994.	17.61	19994.	-0.02	32.	-0.01	0.01
-45.	350.	1500.	21.93	7530.	21.76	7562.	-0.17	32.	-0.42	0.42
-45.	350.	1500.	20.92	28304.	20.61	28339.	-0.31	35.	-0.75	0.75
-45.	400.	1500.	20.39	2537.	20.37	2537.	-0.02	36.	-0.85	0.85
-45.	450.	1500.	19.75	28982.	19.57	29018.	-0.18	36.	-0.93	0.93
-45.	450.	1500.	18.89	2991.	18.63	2991.	-0.26	39.	-0.50	0.50
-45.	500.	1500.	18.89	3449.	18.58	3450.	-0.31	41.	-0.54	0.54
-45.	550.	1500.	18.04	10073.	17.82	10114.	-0.23	41.	-0.58	0.58
-45.	550.	1500.	17.10	3912.	17.05	3914.	-0.05	52.	-0.74	0.74
-45.	600.	1500.	17.91	10480.	17.83	10532.	-0.09	52.	-0.50	0.50
-45.	600.	1500.	16.91	14754.	16.55	14755.	-0.36	68.	-1.19	1.19
-45.	600.	1500.	16.91	10803.	16.55	10871.	-0.36	68.	-1.19	1.19

DEG	TAS	ALT	NAVAIR 01-1C-IT-1 BALLISTICS TIME	BOEING ALGORITHM TIME	NPS MODIFIED ALGORITHM DIST	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
-45.	650.	6000.	7.159	7.05	5218.	-0.10	1.43	0.12
-45.	650.	15000.	16.430	16.047	11170.	-0.45	-2.71	0.93
-60.	300.	4000.	17.333	17.277	18221.	-0.03	-0.45	0.07
-60.	300.	15000.	20.330	20.547	4965.	-0.16	-0.77	0.36
-60.	350.	4000.	6.577	6.541	1913.	-0.03	-0.38	0.07
-60.	350.	15000.	19.076	18.912	15419.	-0.16	-0.85	0.34
-60.	400.	5000.	17.264	17.227	2406.	-0.04	-0.57	0.07
-60.	400.	15000.	17.944	17.777	5806.	-0.17	-0.94	0.32
-60.	450.	5500.	16.245	16.295	2697.	-0.05	-0.50	0.07
-60.	450.	15000.	17.777	17.772	6133.	-0.04	-0.27	0.03
-60.	500.	6500.	16.777	16.772	3204.	-0.05	-0.62	0.06
-60.	550.	15000.	16.117	15.910	3406.	-0.20	-1.24	0.33
-60.	550.	7000.	17.773	17.709	6498.	-0.07	-0.87	0.10
-60.	550.	15000.	15.431	15.699	6628.	-0.24	-1.56	0.38
-60.	600.	8500.	18.819	18.698	4225.	-0.12	-1.33	0.18
-60.	600.	15000.	14.899	14.558	6807.	-0.31	-2.15	0.58
-60.	650.	9500.	19.380	19.198	4730.	-0.19	-2.99	0.51
-60.	650.	15000.	14.440	13.998	6964.	-0.42	-2.89	0.70

WEAPON COEFFICIENTS FOR IDNO 11

CFORM1 = 1.343096 DKG1 = 0.0 DM1 = 0.0 VMUZ = 0.0 DS = 0.0
 CFORM2 = 0.0 DKG2 = 0.0 DM2 = 0.0 FN = 0.0 SL = 0.0
 ITYPE = -1 IREF = 1 VE = 0.0
 IBOOTH = 1 DMAX = 5.00 DTI = 1.00

DEG	TAS	ALT	NAVAIR 01-1C-11-1 BALLISTICS TABLES TIME	BOEING MODIFIED ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR DIST
10.	300.	500.	8.95	4412.	-0.01	-0.15	-0.11
10.	300.	300.	16.74	8181.	-0.01	-0.09	-0.04
10.	350.	500.	19.61	5515.	-0.01	-0.02	-0.11
10.	350.	300.	17.29	9826.	-0.00	-0.12	-0.04
10.	400.	500.	10.30	6733.	-0.01	-0.07	-0.11
10.	400.	300.	17.87	1555.	-0.01	-0.15	-0.04
10.	450.	500.	11.01	18068.	-0.02	-0.06	-0.11
10.	450.	300.	18.45	13369.	-0.01	-0.12	-0.05
10.	500.	500.	11.73	15220.	-0.01	-0.14	-0.12
10.	500.	300.	19.04	12087.	-0.01	-0.12	-0.05
10.	550.	500.	12.47	17246.	-0.02	-0.14	-0.12
10.	550.	300.	19.65	12701.	-0.01	-0.17	-0.05
10.	600.	500.	13.20	19185.	-0.03	-0.19	-0.23
10.	600.	300.	20.26	14192.	-0.02	-0.30	-0.12
10.	650.	500.	23.85	20859.	-0.04	-0.32	-0.36
10.	650.	300.	20.70	4851.	-0.02	-0.30	-0.18
10.	300.	1500.	30.98	15164.	-0.01	-0.10	-0.07
00.	350.	1500.	30.70	15652.	-0.00	-0.06	-0.06
00.	350.	1500.	31.03	17647.	-0.02	-0.07	-0.07
00.	400.	1500.	39.71	6451.	-0.01	-0.07	-0.06
00.	400.	1500.	31.10	20112.	-0.03	-0.09	-0.08
00.	450.	1500.	31.20	22555.	-0.01	-0.08	-0.13
00.	450.	1500.	31.92	25582.	-0.03	-0.08	-0.06
00.	500.	1500.	31.20	24955.	-0.01	-0.08	-0.14
00.	500.	1500.	31.93	27232.	-0.02	-0.17	-0.06
00.	550.	1500.	31.95	27205.	-0.01	-0.13	-0.15
00.	550.	1500.	31.98	7857.	-0.02	-0.25	-0.17
00.	600.	1500.	31.86	29100.	-0.02	-0.26	-0.27

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TIME	NPS BOEING TIME	MODIFIED ALGORITHM DIST	DIFFERENCE TIME	DIFFERENCES DIST	PER CENT TIME	ERROR DIST
0:	650:	1000:	8427:	7.95	8384:	-0.03	-43:	-0.35	-0.50
0:	650:	1500:	30700:	32.13	30658:	-0.01	-42:	-0.04	-0.06
-10:	300:	4000:	6559:	13.37	6523:	-0.01	-2:	-0.10	-0.03
-10:	350:	1500:	4042:	17.01	6557:	-0.01	-3:	-0.06	-0.08
-10:	350:	1500:	8474:	14.87	4039:	-0.01	-3:	-0.06	-0.04
-10:	400:	1500:	4418:	16.71	4414:	-0.01	-4:	-0.11	-0.09
-10:	400:	1500:	11006:	16.99	11003:	-0.01	-3:	-0.04	-0.03
-10:	450:	1500:	14757:	16.43	14752:	-0.01	-5:	-0.17	-0.11
-10:	450:	1500:	13666:	18.86	13661:	-0.00	-5:	-0.02	-0.04
-10:	500:	1500:	15063:	16.16	15057:	-0.01	-6:	-0.13	-0.12
-10:	500:	10000:	16935:	21.21	16929:	-0.01	-8:	-0.04	-0.04
-10:	550:	12000:	20226:	23.48	20216:	-0.01	-10:	-0.16	-0.14
-10:	550:	1500:	5539:	25.69	5533:	-0.01	-12:	-0.03	-0.05
-10:	600:	1500:	23353:	25.76	23335:	-0.01	-18:	-0.23	-0.22
-10:	600:	1500:	5787:	25.50	5762:	-0.01	-25:	-0.02	-0.08
-10:	650:	1500:	25393:	26.87	25374:	-0.02	-19:	-0.08	-0.07
-20:	300:	1500:	2692:	5.89	2690:	-0.01	-2:	-0.05	-0.06
-20:	350:	1500:	6918:	14.81	6917:	-0.01	-2:	-0.02	-0.02
-20:	350:	1500:	2901:	15.26	2899:	-0.01	-2:	-0.16	-0.08
-20:	400:	1500:	6273:	17.12	6270:	-0.00	-3:	-0.02	-0.03
-20:	400:	10000:	3847:	19.07	3844:	-0.01	-4:	-0.15	-0.07
-20:	450:	10000:	11752:	19.73	11749:	-0.01	-4:	-0.17	-0.09
-20:	450:	12500:	14051:	21.39	14047:	-0.01	-5:	-0.03	-0.04
-20:	500:	15000:	14717:	21.38	14712:	-0.01	-5:	-0.23	-0.10
-20:	500:	15000:	17755:	23.61	17747:	-0.01	-8:	-0.06	-0.04
-20:	550:	15000:	14369:	23.06	14365:	-0.01	-4:	-0.21	-0.12
-20:	550:	15000:	18866:	23.78	18858:	-0.01	-8:	-0.05	-0.04
-20:	600:	15000:	14490:	24.90	14482:	-0.01	-8:	-0.36	-0.17
-20:	600:	15000:	19793:	22.52	19784:	-0.01	-13:	-0.04	-0.07
-20:	650:	15000:	4590:	22.60	4583:	-0.03	-16:	-0.18	-0.35
-30:	300:	15000:	20582:	25.80	20583:	-0.01	-1:	-0.07	-0.00
-30:	300:	15000:	7412:	17.27	7410:	-0.01	-2:	-0.09	-0.07
-30:	350:	15000:	2687:	15.29	2685:	-0.00	-2:	-0.02	-0.06
-30:	350:	12000:	9931:	19.95	9928:	-0.01	-3:	-0.05	-0.03
-30:	400:	15000:	3385:	22.27	3382:	-0.01	-3:	-0.17	-0.08
-30:	400:	15000:	12573:	22.27	12568:	-0.01	-5:	-0.04	-0.04

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TABLES	NPS MODIFIED BOEING ALGORITHM	DIFFERENCES TIME DIST	PER CENT TIME ERROR DIST
-30	450	2500	3521	5:40	0:01	0:07
-30	450	1500	13574	21:49	-0:01	-0:03
-30	500	2500	13632	5:02	-0:00	-0:07
-30	500	1500	14465	20:81	-0:01	-0:04
-30	550	2500	14362	5:49	-0:01	-0:04
-30	550	1500	15225	20:25	-0:01	-0:04
-30	600	2500	14459	5:16	-0:02	-0:11
-30	600	1500	15855	19:78	-0:02	-0:05
-30	650	2500	15194	5:63	-0:02	-0:19
-30	650	1500	16401	19:34	-0:00	-0:00
-40	300	2500	2299	5:97	-0:01	-0:04
-40	300	1500	8460	22:42	-0:01	-0:04
-40	350	2500	2424	5:37	-0:01	-0:04
-40	350	1500	9370	21:33	-0:01	-0:03
-40	400	2500	20175	5:75	-0:03	-0:07
-40	400	1500	10176	20:38	-0:01	-0:03
-40	450	2500	3044	5:28	-0:01	-0:07
-40	450	1500	10833	19:55	-0:01	-0:06
-40	500	2500	13576	5:55	-0:01	-0:03
-40	500	1500	11498	18:86	-0:01	-0:06
-40	550	2500	14114	5:99	-0:01	-0:06
-40	550	1500	12013	17:12	-0:02	-0:04
-40	600	2500	12437	6:40	-0:02	-0:04
-40	600	1500	12809	16:89	-0:02	-0:11
-45	300	2500	1996	5:61	-0:00	-0:07
-45	300	1500	7574	21:73	-0:00	-0:04
-45	350	2500	2443	5:90	-0:01	-0:03
-45	350	1500	2351	20:58	-0:01	-0:04
-45	400	2500	2539	5:33	-0:00	-0:03
-45	400	1500	2993	19:60	-0:00	-0:04
-45	450	2500	9623	5:60	-0:00	-0:03
-45	450	1500	3453	18:78	-0:01	-0:05
-45	500	2500	10131	5:09	-0:01	-0:03
-45	500	1500	3916	17:05	-0:01	-0:03
-45	550	2500	10553	6:82	-0:01	-0:03
-45	600	1500	4764	16:50	-0:02	-0:03
-45			10900		-0:00	-0:00

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TABLES TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR DIST
-45.	650.	6000.	7.04	7.02	-0.02	-0.24	-0.10
-45.	650.	15000.	15.95	15.93	-0.02	-0.12	-0.02
-60.	300.	15000.	7.27	7.26	-0.01	-0.10	-0.01
-60.	300.	15000.	20.16	20.15	-0.01	-0.07	-0.04
-60.	350.	15000.	16.55	16.54	-0.01	-0.16	-0.01
-60.	350.	15000.	18.89	18.88	-0.01	-0.06	-0.02
-60.	400.	15000.	17.22	17.21	-0.01	-0.11	-0.03
-60.	400.	15000.	17.75	17.74	-0.01	-0.07	-0.03
-60.	450.	15000.	16.72	16.71	-0.01	-0.07	-0.03
-60.	450.	15000.	17.88	17.87	-0.01	-0.08	-0.03
-60.	500.	15000.	15.70	15.69	-0.01	-0.05	-0.01
-60.	550.	15000.	15.15	15.14	-0.01	-0.09	-0.03
-60.	600.	15000.	14.52	14.50	-0.02	-0.22	-0.02
-60.	650.	15000.	19.17	19.15	-0.02	-0.21	-0.04
-60.	650.	15000.	13.90	13.89	-0.01	-0.09	-0.02
			5228.	5223.	-0.05		
			11205.	11203.	-0.02		
			4972.	4970.	-0.02		
			1914.	1914.	0.00		
			5426.	5425.	-0.01		
			2407.	2406.	-0.01		
			5813.	5811.	-0.02		
			2699.	2698.	-0.01		
			6140.	6139.	-0.01		
			3206.	3205.	-0.01		
			3500.	3499.	-0.01		
			6638.	6637.	-0.01		
			4229.	4228.	-0.01		
			6821.	6820.	-0.01		
			4738.	4736.	-0.02		
			6982.	6980.	-0.02		

WEAPON COEFFICIENTS FOR IDNO 12

CFORM1 = 1.2099991
 CFORM2 = 0.0
 I TYPE = -1
 I BOTH = 1
 DKG1 = 0.0
 DKG2 = 0.0
 I REF = 1
 DMAX = 5.00
 DM1 = 0.0
 DM2 = 0.0
 VE = 0.0
 DTI = 3.00
 VMUZ = 0.0
 FN = 0.0
 DS = 0.0
 SL = 0.0

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TABLES	NPS MODIFIED BOEING ALGORITHM	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR
10.	300.	500.	8.95	4412.	01	16	0.01
10.	350.	3000.	16.74	8189.	02	12	0.10
10.	350.	500.	19.61	5516.	01	10	0.02
10.	350.	500.	17.29	9839.	01	08	0.13
10.	400.	500.	17.30	6736.	01	13	0.05
10.	400.	500.	17.87	1575.	02	14	0.17
10.	450.	500.	11.01	1807.	02	12	0.20
10.	450.	500.	11.45	1339.	02	10	0.24
10.	450.	500.	11.73	1530.	02	13	0.11
10.	500.	500.	11.04	1105.	02	14	0.16
10.	500.	500.	12.47	1195.	03	14	0.28
10.	550.	500.	12.65	1271.	03	16	0.33
10.	550.	500.	19.20	1927.	03	14	0.28
10.	600.	500.	13.26	1215.	03	22	0.39
10.	650.	500.	13.89	1424.	03	14	0.01
10.	650.	500.	20.85	2085.	03	22	0.14
10.	650.	500.	20.98	4851.	01	22	0.02
10.	300.	15000.	30.98	1516.	01	24	0.16
10.	350.	15000.	31.70	1565.	01	24	0.02
10.	350.	15000.	31.71	1764.	01	25	0.19
10.	400.	15000.	31.10	2011.	08	14	0.04
10.	450.	15000.	31.92	2593.	01	19	0.21
10.	450.	15000.	31.20	2260.	09	24	0.04
10.	500.	15000.	31.93	2657.	02	30	0.24
10.	500.	15000.	31.35	2501.	02	33	0.04
10.	550.	15000.	31.93	2727.	10	33	0.27
10.	550.	15000.	31.58	2784.	03	36	0.12
10.	600.	15000.	31.95	2921.	12		
10.	600.	15000.	31.86				

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TIME	NAVIR 01-1C-1T-1 TABLES DIST	NPS MODIFIED BOEING TIME	MODIFIED ALGORITHM DIST	DIFFERENCES TIME	DIFFERENCES DIST	PER CENT TIME	PER CENT ERROR DIST
-45	650	6000	7.04	5228	7.00	5226	-0.04	-22	-0.58	-0.03
-45	650	15000	15.27	11205	15.81	11222	-0.01	22	-0.86	-0.20
-60	300	4000	20.16	4972	20.11	4974	-0.05	20	-0.18	0.01
-60	300	15000	16.55	1914	16.53	1914	-0.02	20	-0.27	0.05
-60	350	4000	18.89	5426	18.84	5429	-0.05	30	-0.23	0.01
-60	350	15000	17.25	2407	17.21	2407	-0.04	30	-0.28	0.06
-60	400	4000	17.75	5813	17.70	5816	-0.05	30	-0.21	0.00
-60	400	15000	17.20	2699	17.19	2698	-0.01	30	-0.30	0.05
-60	450	4000	16.72	6140	16.69	6143	-0.03	-13	-0.18	-0.03
-60	450	15000	17.72	3206	17.70	3206	-0.02	-30	-0.24	-0.01
-60	500	4000	15.88	6414	15.82	6418	-0.06	-40	-0.41	-0.06
-60	500	15000	17.70	3500	17.68	3500	-0.02	-40	-0.30	-0.00
-60	550	4000	15.15	6638	15.07	6644	-0.08	6	-0.55	-0.08
-60	550	15000	18.69	4229	18.64	4230	-0.05	18	-0.57	0.02
-60	600	4000	14.52	6821	14.42	6829	-0.10	29	-0.72	0.11
-60	600	15000	19.17	4738	19.11	4740	-0.06	29	-0.71	0.04
-60	650	4000	13.90	6982	13.78	6991	-0.12	9	-0.84	0.13

WEAPON COEFFICIENTS FOR IDNO 13

CFORM1 = 1.0C00000 DKG1 = 0.0 DM1 = 0.0 VMUZ = 0.0 DS = 0.0
 CFORM2 = 0.0 DKG2 = 0.0 DM2 = 0.0 FN = 0.0 SL = 0.0
 ITYPE = -1 IREF = 1 DMAX = 5.00 VE = 0.0 DTI = 3.00

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TABLES TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT ERROR TIME	ERROR DIST
10.	300.	1000.	11.00	11.08	0.08	0.76	-0.07
10.	300.	3000.	16.72	16.71	-0.01	-0.04	-0.04
10.	350.	1000.	11.27	11.70	-0.01	-0.08	-0.08
10.	350.	3000.	17.27	17.26	-0.01	-0.13	-0.11
10.	400.	500.	10.30	10.29	-0.01	-0.10	-0.06
10.	400.	3000.	17.84	17.83	-0.01	-0.12	-0.12
10.	450.	500.	11.01	11.00	-0.01	-0.15	-0.13
10.	450.	3000.	18.43	18.42	-0.01	-0.16	-0.13
10.	500.	500.	11.74	11.72	-0.02	-0.14	-0.13
10.	500.	3000.	19.02	19.01	-0.01	-0.14	-0.13
10.	550.	500.	12.48	12.46	-0.02	-0.09	-0.07
10.	550.	3000.	19.63	19.61	-0.02	-0.05	-0.05
0.	300.	15000.	11.19	11.18	-0.01	-0.07	-0.07
0.	300.	20000.	11.87	11.85	-0.02	-0.07	-0.07
0.	350.	15000.	11.20	11.19	-0.01	-0.08	-0.07
0.	350.	20000.	11.91	11.89	-0.02	-0.12	-0.08
0.	400.	15000.	9.70	9.69	-0.01	-0.09	-0.08
0.	400.	20000.	9.97	9.96	-0.01	-0.09	-0.08
0.	450.	15000.	9.70	9.69	-0.01	-0.08	-0.07
0.	450.	20000.	9.95	9.94	-0.01	-0.09	-0.08
0.	500.	15000.	9.70	9.69	-0.01	-0.08	-0.07
0.	500.	20000.	9.95	9.94	-0.01	-0.09	-0.08
0.	550.	15000.	9.18	9.15	-0.03	-0.11	-0.09
0.	550.	20000.	9.38	9.35	-0.03	-0.09	-0.09
0.	300.	15000.	17.33	17.32	-0.01	-0.07	-0.07
0.	300.	20000.	17.35	17.34	-0.01	-0.07	-0.07
0.	350.	15000.	13.01	13.01	-0.00	-0.05	-0.04
0.	350.	20000.	14.84	14.83	-0.01	-0.05	-0.04
0.	400.	15000.	16.71	16.70	-0.01	-0.10	-0.08
0.	400.	20000.	16.95	16.94	-0.01	-0.10	-0.04
-10.							
-10.							
-10.							
-10.							

DEG	TAS	ALT	NAVAIR 01-1C-11-1 BALLISTICS TABLES TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR
-10:	450:	1500:	6.79	4759:	-0.01	-0.05	-0.08
-10:	450:	1500:	18.16	13719:	-0.01	-0.05	-0.05
-10:	500:	1000:	21.12	15065:	-0.01	-0.06	-0.11
-10:	550:	1500:	25.91	17014:	-0.01	-0.18	-0.17
-20:	550:	1200:	23.34	20340:	-0.01	-0.06	-0.05
-20:	300:	2000:	14.77	33322:	-0.01	-0.05	-0.03
-20:	350:	2000:	16.55	6932:	-0.01	-0.09	-0.05
-20:	350:	2000:	17.06	3607:	-0.01	-0.07	-0.03
-20:	400:	2000:	19.12	9296:	-0.01	-0.14	-0.07
-20:	450:	1000:	15.73	3848:	-0.01	-0.06	-0.04
-20:	450:	12500:	21.30	11788:	-0.02	-0.19	-0.04
-20:	500:	1500:	26.43	14771:	-0.02	-0.03	-0.07
-20:	550:	1500:	23.45	15049:	-0.02	-0.07	-0.05
-20:	550:	1500:	23.08	17835:	-0.02	-0.11	-0.06
-30:	300:	1500:	23.91	15244:	-0.02	-0.09	-0.04
-30:	350:	12500:	17.23	18973:	-0.01	-0.13	-0.03
-30:	350:	12500:	19.88	3007:	-0.00	-0.00	-0.04
-30:	400:	1500:	22.19	74216:	-0.00	-0.08	-0.06
-30:	450:	1500:	21.37	9957:	-0.00	-0.10	-0.04
-30:	450:	1500:	21.86	3385:	-0.00	-0.08	-0.05
-30:	500:	1500:	20.66	12612:	-0.00	-0.07	-0.05
-30:	550:	1500:	20.48	13618:	-0.00	-0.08	-0.05
-40:	300:	14500:	21.86	14243:	-0.00	-0.10	-0.06
-40:	350:	1500:	20.96	14562:	-0.00	-0.07	-0.03
-40:	350:	1500:	21.84	15299:	-0.00	-0.10	-0.04
-40:	400:	1500:	21.24	82829:	-0.00	-0.05	-0.05
-40:	400:	1500:	21.74	28296:	-0.01	-0.09	-0.04
-40:	450:	1500:	20.23	93946:	-0.01	-0.11	-0.04
-40:	450:	1500:	19.16	10277:	-0.01	-0.09	-0.05
-40:	500:	1500:	15.58	10912:	-0.00	-0.06	-0.04
-40:	500:	1500:	18.52	11531:	-0.00	-0.11	-0.03

DEG	TAS	ALT	NAVAIR 01-1C-11-1 BALLISTICS TABLES TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST.
-40.	550.	4000.	5.85	5.84	0.01	-0.12	-0.04
-40.	550.	15000.	17.52	17.52	-0.00	-0.17	-0.01
-45.	300.	15000.	21.65	21.64	-0.01	-0.06	-0.03
-45.	350.	15000.	25.89	25.89	-0.00	-0.06	-0.02
-45.	400.	15000.	20.50	20.48	-0.02	-0.10	-0.04
-45.	450.	15000.	19.12	19.12	-0.00	-0.03	-0.02
-45.	500.	15000.	15.62	15.42	-0.20	-0.08	-0.05
-45.	550.	15000.	18.49	18.47	-0.02	-0.09	-0.05
-45.	550.	15000.	34.55	34.53	-0.02	-0.06	-0.05
-45.	550.	15000.	101.61	101.57	-0.04	-0.10	-0.04
-45.	550.	15000.	39.19	39.17	-0.02	-0.08	-0.04
-60.	300.	15000.	18.23	18.23	-0.00	-0.08	-0.03
-60.	350.	15000.	19.15	19.15	-0.00	-0.04	-0.01
-60.	400.	15000.	24.09	24.08	-0.01	-0.07	-0.04
-60.	450.	15000.	58.25	58.24	-0.01	-0.10	-0.02
-60.	500.	15000.	27.53	27.51	-0.02	-0.06	-0.03
-60.	550.	15000.	32.08	32.07	-0.01	-0.04	-0.03
-60.	550.	15000.	64.29	64.27	-0.02	-0.13	-0.03
-60.	550.	15000.	35.02	35.02	-0.00	-0.13	-0.01
-60.	550.	15000.	66.57	66.56	-0.01	-0.13	-0.02

WEAPON COEFFICIENTS FOR IDNO 14

CFORM1 = 3.1199999 DKG1 = -.0012230 DM1 = 0.0 VMUZ = 0.0 DS = 0.0
 CFORM2 = 0.0 DKG2 = 0.0 DM2 = 0.0 FN = 0.0 SL = 0.0
 ITYPE = -1 IREF = 1 VE = 0.0
 IBOOTH = 1 DMAX = 5.00 DTI = 3.00

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TABLES TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR
10.	300.	500.	8.95	4369.	0.02	22	22
10.	300.	300.	16.77	8082.	0.02	21	0.08
10.	350.	500.	19.59	5448.	0.02	21	0.23
10.	350.	300.	17.33	9683.	0.02	19	0.09
10.	400.	500.	10.29	6633.	0.02	13	0.24
10.	400.	300.	17.91	11355.	0.03	31	0.10
10.	450.	500.	11.00	13098.	0.03	11	0.27
10.	450.	300.	18.71	93119.	0.03	26	0.10
10.	500.	500.	11.10	14911.	0.04	26	0.28
10.	500.	300.	19.10	10817.	0.04	29	0.11
10.	550.	500.	12.44	16788.	0.03	15	0.26
10.	550.	300.	19.71	14816.	0.03	17	0.12
0.	300.	1500.	31.29	14933.	0.03	18	0.06
0.	300.	1500.	31.74	15605.	0.03	18	0.13
0.	350.	1500.	31.36	17347.	0.04	10	0.06
0.	350.	1500.	31.95	15231.	0.04	13	0.23
0.	400.	1500.	31.46	19734.	0.02	4	0.07
0.	450.	1500.	31.95	5872.	0.02	11	0.07
0.	450.	1500.	31.59	22089.	0.02	30	0.30
0.	500.	1500.	31.96	6510.	0.04	13	0.07
0.	550.	1500.	31.78	27146.	0.03	36	0.32
0.	550.	1500.	32.06	26478.	0.05	19	0.20
0.	550.	1500.	32.77	6511.	0.01	06	0.20
-10.	300.	4000.	13.64	3068.	0.01	26	0.06
-10.	300.	1000.	15.35	8398.	0.01	26	0.22
-10.	350.	1000.	14.36	3324.	0.02	13	0.06
-10.	400.	1000.	15.09	10885.	0.02	11	0.27
-10.	400.	6500.	17.16		0.02		0.06

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR
-10	450	1500	6:07	6:46	0:01	19	0:06
-10	450	1800	19:21	19:05	0:02	0:29	0:23
-10	500	1500	20:58	16:19	0:02	0:10	0:05
-10	550	1500	23:27	20:94	0:02	0:13	0:09
-10	550	1500	23:27	23:25	0:02	0:09	0:12
-20	300	1500	14:23	15:92	0:01	0:16	0:04
-20	350	1500	15:27	15:28	0:01	0:22	0:15
-20	350	1500	16:51	16:56	0:01	0:09	0:05
-20	350	1500	19:30	14:89	0:02	0:33	0:20
-20	400	1000	19:37	19:28	0:01	0:19	0:05
-20	450	1200	21:71	15:68	0:03	0:12	0:16
-20	500	1200	24:09	21:41	0:01	0:24	0:18
-20	550	1500	25:18	24:06	0:01	0:43	0:06
-30	300	1200	17:44	18:49	0:01	0:20	0:07
-30	350	1200	20:32	23:82	0:01	0:24	0:11
-30	350	1200	22:61	17:53	0:01	0:07	0:04
-30	400	1200	22:87	20:17	0:03	0:23	0:14
-30	450	1500	25:61	22:58	0:01	0:15	0:05
-30	500	1500	25:85	25:43	0:01	0:19	0:04
-30	550	1500	21:05	21:04	0:01	0:14	0:15
-30	550	1500	21:22	21:24	0:02	0:22	0:07
-30	550	1500	20:88	20:80	0:03	0:15	0:04
-40	300	1450	20:09	22:58	0:01	0:14	0:05
-40	350	1450	21:44	23:51	0:03	0:22	0:15
-40	400	1500	21:78	21:04	0:01	0:48	0:03
-40	450	1500	22:00	20:80	0:08	0:38	0:17
-40	500	1500	22:22	22:99	0:02	0:43	0:09
-40	550	1500	22:43	22:94	0:01	0:09	0:04
-40	550	1500	22:50	22:96	0:02	0:27	0:11
-40	400	1500	21:78	22:21	0:01	0:19	0:08
-40	450	1500	20:58	20:89	0:02	0:12	0:04
-40	500	1500	19:32	19:37	0:01	0:27	0:11
-40	550	1500	19:64	19:62	0:03	0:16	0:04
-40	550	1500	19:11	19:06	0:05	0:26	0:14

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT DIST	ERROR DIST
-40.	550.	4000.	5:92	4107.	-0:01	-0:23	-0:09	-0:09
-45.	550.	1500.	18:61	11851.	-0:09	-0:46	-0:00	-0:07
-45.	300.	1500.	22:01	11992.	-0:02	-0:18	-0:03	-0:03
-45.	350.	13000.	5:01	7513.	-0:02	-0:11	-0:08	-0:08
-45.	350.	13000.	5:93	2440.	-0:02	-0:12	-0:04	-0:04
-45.	400.	13000.	20:87	2286.	-0:02	-0:22	-0:08	-0:08
-45.	400.	13000.	5:40	2536.	-0:02	-0:12	-0:03	-0:03
-45.	450.	15000.	19:84	8990.	-0:03	-0:18	-0:11	-0:11
-45.	450.	15000.	5:65	2947.	-0:03	-0:16	-0:04	-0:04
-45.	500.	15000.	18:90	3448.	-0:05	-0:30	-0:08	-0:08
-45.	550.	15000.	5:23	1039.	-0:02	-0:34	-0:03	-0:03
-45.	550.	15000.	18:12	13910.	-0:09	-0:53	-0:08	-0:08
-45.	550.	15000.	17:70	10421.	-0:03	-0:36	-0:02	-0:02
-60.	300.	15000.	17:31	1819.	-0:03	-0:14	-0:04	-0:04
-60.	350.	15000.	20:58	1938.	-0:02	-0:10	-0:07	-0:07
-60.	350.	15000.	6:14	1912.	-0:02	-0:13	-0:05	-0:05
-60.	400.	15000.	17:27	152403.	-0:01	-0:16	-0:06	-0:06
-60.	450.	15000.	18:26	2776.	-0:03	-0:17	-0:04	-0:04
-60.	450.	15000.	17:06	2694.	-0:03	-0:17	-0:06	-0:06
-60.	500.	15000.	17:80	6101.	-0:02	-0:23	-0:02	-0:02
-60.	500.	15000.	16:29	3267.	-0:06	-0:57	-0:06	-0:06
-60.	550.	15000.	17:81	6367.	-0:02	-0:26	-0:02	-0:02
-60.	550.	15000.	15:72	3492.	-0:11	-0:61	-0:04	-0:04
-60.	550.	15000.	15:72	6570.	-0:11	-0:61	-0:04	-0:04

WEAPON COEFFICIENTS FOR IDNO 15

CFORM1 = 3.4571991 DKG1 = 0.0 DM1 = 0.0 VMUZ = 0.0 DS = 0.0
 CFORM2 = 0.0 DKG2 = 0.0 DM2 = 0.0 FN = 0.0 SL = 0.0
 ITYPE = -1 IREF = 1 VE = 0.0
 IBOOTH = 1 DMAX = 3.00 DTI = 2.00

DEG	TAS	ALT	NAVAIR 01-IC-IT-1 BALLISTICS TABLES TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
10.	300.	500.	8.95	4342.	4335.	-0.01	-7.
10.	300.	300.	16.85	7990.	7981.	-0.01	-9.
10.	350.	500.	19.61	5402.	5392.	-0.01	-10.
10.	350.	300.	17.41	9549.	9535.	-0.00	-14.
10.	400.	500.	10.29	6560.	6547.	-0.01	-13.
10.	400.	300.	17.99	11168.	11150.	-0.01	-18.
10.	450.	500.	10.98	17815.	17798.	-0.01	-17.
10.	450.	300.	18.57	12845.	12822.	-0.00	-23.
10.	500.	500.	11.69	9163.	9140.	-0.02	-23.
10.	500.	300.	19.17	14577.	14548.	-0.02	-29.
10.	550.	500.	12.47	10598.	10570.	-0.02	-28.
10.	550.	300.	19.77	16360.	16322.	-0.00	-36.
10.	300.	1000.	17.95	3926.	3922.	-0.01	-23.
0.	300.	15000.	31.62	14707.	14684.	-0.01	-29.
0.	350.	15000.	31.71	4568.	4562.	-0.01	-6.
0.	350.	15000.	31.77	17053.	17024.	-0.01	-29.
0.	400.	15000.	31.81	5207.	5199.	-0.01	-8.
0.	450.	15000.	31.93	19366.	19332.	-0.01	-34.
0.	450.	15000.	31.99	5842.	5833.	-0.00	-10.
0.	500.	15000.	37.99	21643.	21603.	-0.00	-40.
0.	500.	15000.	32.11	6473.	6462.	-0.01	-11.
0.	550.	15000.	32.37	23873.	23827.	-0.01	-13.
0.	550.	15000.	32.00	27101.	27088.	-0.01	-13.
0.	300.	15000.	32.37	25937.	25889.	-0.01	-48.
-10.	300.	3500.	5.50	2776.	2773.	-0.00	-3.
-10.	350.	1000.	12.38	5991.	5986.	-0.01	-5.
-10.	350.	5000.	15.38	3067.	3064.	-0.01	-3.
-10.	350.	5000.	15.10	8328.	8320.	-0.01	-8.
-10.	400.	1000.	15.11	3324.	3320.	-0.01	-4.
-10.	400.	6000.	16.51	10289.	10278.	-0.00	-11.

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TABLES TIME	NPS BOEING MODIFIED ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
10.	450.	1000.	3551.	55	0.01	13	14
-10.	450.	7500.	12836.	18.55	-0.00	-0.02	-0.12
-10.	450.	1000.	13751.	4.62	-0.01	-0.02	-0.14
-10.	500.	9000.	15479.	20.41	-0.00	-0.02	-0.13
-10.	550.	1000.	13928.	4.40	-0.01	-0.01	-0.15
-10.	550.	11000.	18682.	22.88	-0.00	-0.01	-0.15
-20.	300.	1500.	6466.	5.22	0.00	0.01	-0.08
-20.	350.	1500.	2891.	14.31	-0.00	0.01	-0.08
-20.	350.	1500.	8757.	16.74	-0.00	0.01	-0.09
-20.	400.	1500.	3062.	14.93	-0.00	-0.00	-0.08
-20.	450.	1500.	11151.	18.89	-0.00	-0.00	-0.10
-20.	450.	1500.	13204.	4.59	-0.00	0.02	-0.09
-20.	450.	1500.	13643.	20.81	-0.00	-0.01	-0.10
-20.	500.	1500.	13322.	4.28	0.00	0.05	-0.10
-20.	500.	1500.	16366.	23.13	-0.01	-0.02	-0.12
-20.	550.	1500.	16351.	25.09	-0.01	-0.03	-0.15
-30.	300.	1500.	18292.	24.64	-0.00	-0.04	-0.07
-30.	300.	1500.	2004.	16.95	-0.00	0.01	-0.05
-30.	300.	1500.	7041.	16.34	-0.00	0.03	-0.05
-30.	350.	1500.	2679.	19.87	-0.00	0.00	-0.09
-30.	350.	1500.	9490.	4.39	-0.00	0.08	-0.07
-30.	400.	1500.	2805.	22.39	-0.00	-0.00	-0.11
-30.	450.	1500.	12905.	4.51	-0.00	0.00	-0.17
-30.	450.	1500.	13291.	22.17	-0.00	-0.00	-0.18
-30.	500.	1500.	13622.	25.09	-0.00	0.07	-0.18
-30.	550.	1500.	14155.	21.75	-0.00	0.01	-0.18
-30.	550.	1500.	13714.	21.10	-0.00	-0.09	-0.23
-40.	300.	1500.	14851.	21.03	-0.00	0.05	-0.10
-40.	300.	1500.	12292.	9.41	-0.00	-0.01	-0.10
-40.	350.	1500.	7767.	21.45	-0.00	0.02	-0.03
-40.	350.	1500.	2417.	5.92	-0.00	-0.02	-0.06
-40.	400.	1500.	9206.	21.82	-0.00	0.00	-0.09
-40.	400.	1500.	2937.	5.94	-0.00	-0.01	-0.06
-40.	450.	1500.	9999.	20.35	-0.00	0.00	-0.09
-40.	450.	1500.	3036.	20.07	-0.00	-0.00	-0.05
-40.	500.	1500.	10699.	5.68	-0.00	-0.04	-0.09
-40.	500.	1500.	13565.	19.34	-0.01	-0.03	-0.05
-40.	500.	1500.	11299.	5.55	-0.01	-0.03	-0.09

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
-40.	550.	4000.	5.97	4098.	-0.00	-0.00	-0.05
-40.	550.	15000.	18.80	11760.	0.01	0.04	-0.11
-45.	300.	15000.	22.67	17990.	0.01	0.13	-0.17
-45.	350.	15000.	25.97	7441.	0.01	0.12	-0.09
-45.	350.	15000.	21.15	2435.	0.01	0.10	-0.03
-45.	400.	15000.	25.43	8208.	0.00	0.03	-0.08
-45.	400.	15000.	20.12	2532.	0.00	0.01	-0.04
-45.	450.	15000.	5.21	8881.	0.00	0.03	-0.08
-45.	450.	15000.	19.71	2984.	0.00	0.03	-0.04
-45.	500.	15000.	5.95	9466.	0.00	0.04	-0.06
-45.	500.	15000.	18.45	3441.	0.00	0.01	-0.08
-45.	550.	15000.	16.17	9963.	0.00	0.04	-0.06
-45.	550.	15000.	17.87	3902.	0.00	0.09	-0.10
-60.	300.	4000.	17.35	10351.	0.02	0.01	-0.03
-60.	350.	4000.	20.63	1897.	0.00	0.01	-0.08
-60.	350.	4000.	19.01.	4898.	0.00	0.07	-0.05
-60.	400.	15000.	19.53.	1908.	0.00	0.02	-0.05
-60.	400.	15000.	15399.	2398.	0.00	0.03	-0.06
-60.	450.	15000.	25738.	5734.	0.01	0.08	-0.04
-60.	450.	15000.	2689.	2688.	0.00	0.03	-0.07
-60.	500.	15000.	6065.	6061.	0.00	0.06	-0.04
-60.	500.	15000.	3193.	3192.	0.01	0.02	-0.06
-60.	550.	15000.	6334.	6333.	0.00	0.01	-0.06
-60.	550.	15000.	3485.	3483.	0.00	0.05	-0.09
-60.	550.	15000.	6543.	6537.	0.01	0.05	-0.09

WEAPON COEFFICIENTS FOR IDNO 16

CFORM1 = 1.6049995 DKG1 = 0.0 DM1 = 0.0 VMUZ = 0.0 DS = 0.0
 CFORM2 = 0.0 DKG2 = 0.0 DM2 = 0.0 FN = 0.0 SL = 0.0
 ITYPE = -1 IREF = 1 VE = 0.0
 IBOTH = 1 DMAX = 5.00 DTI = 3.00

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TIME	TABLES DIST	NPS MODIFIED BOEING ALGORITHM TIME	DIST	DIFFERENCES TIME	DIST	PER CENT TIME	ERROR DIST
10.	300.	500.	8.95	4412.	8.93	4397.	-0.02	-15.	-0.18	-0.35
10.	300.	3000.	16.74	8181.	16.60	8151.	-0.00	-30.	-0.14	-0.36
10.	350.	500.	19.61	5515.	19.30	5492.	-0.01	-23.	-0.14	-0.42
10.	350.	3000.	17.29	9826.	17.08	9784.	-0.02	-42.	-0.19	-0.49
10.	400.	500.	17.30	6733.	17.08	6700.	-0.00	-33.	-0.19	-0.50
10.	400.	3000.	17.87	11555.	17.78	11497.	-0.00	-58.	-0.25	-0.59
10.	450.	500.	11.01	8068.	10.45	8020.	-0.03	-47.	-0.23	-0.68
10.	450.	3000.	18.45	13369.	18.70	13255.	-0.00	-14.	-0.23	-0.67
10.	500.	500.	11.73	9520.	11.04	9455.	-0.03	-65.	-0.23	-0.76
10.	500.	3000.	19.04	15266.	19.44	15102.	-0.01	-103.	-0.27	-1.06
10.	550.	500.	12.47	11087.	12.65	11002.	-0.01	-85.	-0.39	-1.06
10.	550.	3000.	19.65	17246.	19.15	17114.	-0.05	-132.	-0.39	-1.06
10.	600.	500.	13.20	12701.	13.04	12566.	-0.02	-135.	-0.66	-1.58
10.	600.	3000.	20.26	19185.	20.80	18994.	-0.09	-191.	-0.66	-1.58
10.	650.	500.	20.85	14192.	20.70	13968.	-0.05	-224.	-0.22	-1.34
10.	650.	3000.	20.85	20859.	20.80	20577.	-0.05	-282.	-0.47	-1.24
0.	300.	1500.	30.98	4851.	31.03	4839.	-0.05	-12.	-0.17	-0.45
0.	300.	1500.	30.70	15164.	31.03	15096.	-0.00	-68.	-0.17	-0.28
0.	350.	1500.	30.98	15652.	31.09	15636.	-0.06	-16.	-0.18	-0.50
0.	350.	1500.	31.03	17647.	31.71	17559.	-0.00	-88.	-0.18	-0.31
0.	400.	1500.	31.71	16451.	31.92	16403.	-0.06	-49.	-0.18	-0.54
0.	400.	1500.	31.10	20112.	31.92	20008.	-0.00	-104.	-0.40	-0.37
0.	450.	1500.	31.92	25930.	31.72	25908.	-0.00	-22.	-0.20	-0.59
0.	450.	1500.	31.20	22555.	31.92	22421.	-0.06	-134.	-0.20	-0.41
0.	500.	1500.	31.93	26585.	31.72	26555.	-0.01	-30.	-0.25	-0.65
0.	500.	1500.	31.35	24955.	31.42	24793.	-0.08	-162.	-0.28	-0.75
0.	550.	1500.	31.93	27205.	31.92	27000.	-0.01	-205.	-0.30	-0.45
0.	550.	1500.	31.58	27205.	31.67	27000.	-0.09	-32.	-0.30	-0.75
0.	600.	1500.	31.95	7857.	31.93	7805.	-0.02	-52.	-0.34	-0.66
0.	600.	1500.	31.86	29100.	31.97	28818.	-0.11	-282.	-0.34	-0.97

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TIME	NAVAIR 01-1C-1T-1 TABLES DIST	NPS MODIFIED BOEING ALGORITHM TIME	MODIFIED ALGORITHM DIST	DIFFERENCES TIME	DIFFERENCES DIST	PER CENT TIME	PER CENT ERROR
00	6500	1000	7.98	8427	7.96	8332	-0.02	-95	-0.29	1.13
10	6500	1500	32.14	30700	32.26	30303	-0.12	-397	-0.03	-1.29
10	3000	1500	13.38	6559	13.39	6519	-0.01	-6	-0.06	-0.17
10	3500	1500	17.08	4042	17.09	4034	-0.01	-15	-0.00	-0.22
10	4000	1500	14.88	8474	14.90	8459	-0.02	-23	-0.11	-0.17
10	4500	1500	16.72	11006	16.73	10971	-0.03	-35	-0.05	-0.32
10	5000	1500	18.46	13666	18.44	13615	-0.04	-51	-0.23	-0.28
10	5500	1500	21.17	15063	21.17	15051	-0.00	-12	-0.00	-0.38
10	6000	1500	23.49	16935	23.49	16862	-0.05	-73	-0.25	-0.43
10	6500	1500	25.77	20226	25.77	20116	-0.08	-110	-0.35	-0.54
10	7000	1500	28.51	25553	28.52	25459	-0.03	-188	-0.09	-0.81
10	7500	1500	31.89	32787	31.90	32655	-0.13	-282	-0.62	-1.12
20	3000	1500	15.87	25393	15.84	25111	-0.17	-14	-0.08	-0.20
20	3500	1500	17.27	26918	17.27	26807	-0.02	-11	-0.02	-0.24
20	4000	1500	19.13	2901	19.14	2897	-0.03	-24	-0.03	-0.30
20	4500	1500	21.08	3273	21.13	3244	-0.04	-35	-0.20	-0.40
20	5000	1500	23.40	3847	23.46	3817	-0.06	-51	-0.29	-0.58
20	5500	1500	25.62	4471	25.71	4444	-0.09	-75	-0.37	-0.82
20	6000	1500	28.11	5225	28.33	5185	-0.11	-96	-0.56	-1.17
20	6500	1500	31.08	6366	31.39	6266	-0.15	-138	-0.69	-1.52
20	7000	1500	34.91	7793	35.06	7680	-0.18	-178	-0.80	-1.86
20	7500	1500	39.16	9490	39.58	9367	-0.21	-258	-1.00	-2.53
20	8000	1500	44.56	11582	45.31	11404	-0.26	-363	-1.18	-3.11
30	3000	1500	17.28	25229	17.32	25126	-0.03	-16	-0.08	-0.21
30	3500	1500	19.86	29931	20.00	29805	-0.04	-26	-0.22	-0.41
30	4000	1500	22.85	3585	23.34	3534	-0.06	-39	-0.28	-0.53
30	4500	1500	25.88	4273	26.54	4234	-0.06	-39	-0.28	-0.53
30	5000	1500	29.65	5135	30.85	5135	-0.06	-39	-0.28	-0.53
30	5500	1500	34.28	6273	35.34	6273	-0.06	-39	-0.28	-0.53
30	6000	1500	39.65	7735	41.34	7735	-0.06	-39	-0.28	-0.53
30	6500	1500	45.88	9490	48.34	9490	-0.06	-39	-0.28	-0.53
30	7000	1500	53.16	11582	56.81	11582	-0.06	-39	-0.28	-0.53
30	7500	1500	61.56	14273	66.54	14273	-0.06	-39	-0.28	-0.53
30	8000	1500	71.08	17755	77.39	17755	-0.06	-39	-0.28	-0.53
30	8500	1500	81.81	22255	90.06	22255	-0.06	-39	-0.28	-0.53
30	9000	1500	94.16	28666	106.77	28666	-0.06	-39	-0.28	-0.53
30	9500	1500	108.28	36666	125.83	36666	-0.06	-39	-0.28	-0.53
30	10000	1500	124.28	47117	148.34	47117	-0.06	-39	-0.28	-0.53
30	10500	1500	142.28	60666	176.80	60666	-0.06	-39	-0.28	-0.53
30	11000	1500	162.28	77777	205.81	77777	-0.06	-39	-0.28	-0.53
30	11500	1500	184.28	99999	250.00	99999	-0.06	-39	-0.28	-0.53
30	12000	1500	218.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	12500	1500	258.28	1573	250.00	1573	-0.06	-39	-0.28	-0.53
30	13000	1500	304.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	13500	1500	358.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	14000	1500	420.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	14500	1500	490.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	15000	1500	568.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	15500	1500	654.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	16000	1500	748.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	16500	1500	850.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	17000	1500	960.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	17500	1500	1078.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	18000	1500	1204.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	18500	1500	1338.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	19000	1500	1480.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	19500	1500	1630.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	20000	1500	1788.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	20500	1500	1954.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	21000	1500	2128.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	21500	1500	2310.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	22000	1500	2500.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	22500	1500	2698.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	23000	1500	2904.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	23500	1500	3118.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	24000	1500	3340.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	24500	1500	3570.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	25000	1500	3808.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	25500	1500	4054.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	26000	1500	4308.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	26500	1500	4570.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	27000	1500	4840.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	27500	1500	5118.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	28000	1500	5404.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	28500	1500	5698.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	29000	1500	6000.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	29500	1500	6310.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	30000	1500	6628.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	30500	1500	6954.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	31000	1500	7288.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	31500	1500	7630.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	32000	1500	7980.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	32500	1500	8338.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	33000	1500	8704.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	33500	1500	9078.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	34000	1500	9460.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	34500	1500	9850.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	35000	1500	10248.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	35500	1500	10654.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	36000	1500	11068.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	36500	1500	11490.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	37000	1500	11920.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	37500	1500	12358.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	38000	1500	12804.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	38500	1500	13258.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	39000	1500	13720.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	39500	1500	14190.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	40000	1500	14668.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	40500	1500	15154.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	41000	1500	15648.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	41500	1500	16150.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	42000	1500	16660.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	42500	1500	17178.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	43000	1500	17704.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	43500	1500	18238.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	44000	1500	18780.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	44500	1500	19330.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	45000	1500	19888.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	45500	1500	20454.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	46000	1500	21028.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	46500	1500	21610.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	47000	1500	22199.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	47500	1500	22796.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	48000	1500	23399.28	12573	250.00	12573	-0.06	-39	-0.28	-0.53
30	48500	1500	24009.28	12573	250.					

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TABLES TIME DIST	NPS MODIFIED BOEING ALGORITHM TIME DIST	DIFFERENCES TIME DIST	PER CENT TIME ERROR DIST
-45.	650.	6000.	7.04	5215.	0.03	0.38
-45.	650.	15000.	15.95	11147.	0.18	1.12
-60.	300.	4000.	17.27	11821.	0.00	0.02
-60.	300.	15000.	20.16	4961.	0.04	0.20
-60.	350.	4000.	16.55	1913.	-0.00	-0.02
-60.	350.	15000.	18.89	5415.	0.05	0.24
-60.	400.	4000.	17.25	2405.	0.00	0.06
-60.	400.	15000.	17.75	5802.	0.05	0.28
-60.	450.	4000.	16.20	2696.	0.01	0.19
-60.	450.	15000.	17.75	6128.	0.05	0.29
-60.	500.	4000.	16.72	3201.	0.01	0.12
-60.	500.	15000.	15.88	6497.	0.07	0.42
-60.	550.	4000.	17.70	3497.	0.01	0.16
-60.	550.	15000.	15.15	6622.	0.09	0.57
-60.	600.	4000.	18.69	4223.	0.02	0.25
-60.	600.	15000.	14.52	6729.	0.12	0.80
-60.	650.	4000.	19.17	4727.	0.06	0.63
-60.	650.	15000.	13.90	6954.	0.16	1.15

WEAPON COEFFICIENTS FOR IDNO 17

CFORM1 = 0.0
CFORM2 = 0.0
ITYPE = -1
IBOTH = 1
DKG1 = 0.0073290
DKG2 = 0.0
IREF = 4
OMAX = 3.00
DM1 = 0.0
DM2 = 0.0
VE = 0.0
DTI = 1.00

VMUZ = 0.0
FN = 0.0
DS = 0.0
SL = 0.0

NAVAIR 01-1C-1T-1 BALLISTICS TABLES

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TABLES TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	DIFFERENCES DIST	PER CENT TIME	PER CENT ERROR DIST
10.	300.	500.	8.96	8.95	-0.01	-2.	-0.14	-0.04
110.	350.	500.	16.91	16.90	-0.01	-3.	-0.08	-0.05
110.	350.	3000.	17.48	17.47	-0.01	-2.	-0.04	-0.02
110.	400.	3000.	18.06	18.05	-0.01	-4.	-0.06	-0.06
110.	400.	3000.	18.67	18.66	-0.01	-1.	-0.06	-0.01
110.	450.	500.	19.24	19.23	-0.01	-7.	-0.10	-0.09
110.	450.	3000.	19.83	19.82	-0.01	-3.	-0.08	-0.02
110.	500.	500.	20.43	20.42	-0.01	-11.	-0.13	-0.13
110.	500.	3000.	21.03	21.02	-0.01	-1.	-0.06	-0.06
110.	550.	500.	21.64	21.63	-0.01	-15.	-0.15	-0.15
110.	550.	3000.	22.25	22.24	-0.01	-15.	-0.10	-0.10
110.	300.	1500.	31.99	31.97	-0.02	-0.	-0.12	-0.01
0.	350.	1500.	32.60	32.59	-0.01	-3.	-0.17	-0.07
0.	350.	1500.	33.21	33.20	-0.01	-2.	-0.18	-0.01
0.	400.	1500.	33.82	33.81	-0.01	-4.	-0.06	-0.08
0.	400.	1500.	34.43	34.42	-0.01	-7.	-0.15	-0.04
0.	450.	1500.	35.04	35.03	-0.01	-15.	-0.15	-0.17
0.	450.	1500.	35.65	35.64	-0.01	-19.	-0.11	-0.14
0.	500.	1500.	36.26	36.25	-0.01	-23.	-0.05	-0.17
0.	500.	1500.	36.87	36.86	-0.01	-21.	-0.07	-0.08
0.	550.	1500.	37.48	37.47	-0.01	-2.	-0.11	-0.07
0.	550.	3000.	38.09	38.08	-0.01	-0.	-0.13	-0.00
0.	300.	1500.	38.70	38.69	-0.01	-3.	-0.08	-0.11
0.	350.	1500.	39.31	39.30	-0.01	-0.	-0.08	-0.10
0.	400.	1500.	39.92	39.91	-0.01	-4.	-0.08	-0.12
0.	400.	1500.	40.53	40.52	-0.01	-2.	-0.05	-0.10
0.	450.	1500.	41.14	41.13	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	41.75	41.74	-0.01	-4.	-0.05	-0.01
0.	500.	1500.	42.36	42.35	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	42.97	42.96	-0.01	-2.	-0.05	-0.01
0.	550.	1500.	43.58	43.57	-0.01	-3.	-0.08	-0.11
0.	300.	1500.	44.19	44.18	-0.01	-0.	-0.08	-0.10
0.	350.	1500.	44.80	44.79	-0.01	-4.	-0.05	-0.12
0.	400.	1500.	45.41	45.40	-0.01	-2.	-0.05	-0.01
0.	400.	1500.	46.02	46.01	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	46.63	46.62	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	47.24	47.23	-0.01	-2.	-0.05	-0.01
0.	500.	1500.	47.85	47.84	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	48.46	48.45	-0.01	-0.	-0.05	-0.01
0.	550.	1500.	49.07	49.06	-0.01	-2.	-0.05	-0.01
0.	300.	1500.	49.68	49.67	-0.01	-0.	-0.05	-0.01
0.	350.	1500.	50.29	50.28	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	50.90	50.89	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	51.51	51.50	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	52.12	52.11	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	52.73	52.72	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	53.34	53.33	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	53.95	53.94	-0.01	-0.	-0.05	-0.01
0.	550.	1500.	54.56	54.55	-0.01	-0.	-0.05	-0.01
0.	300.	1500.	55.17	55.16	-0.01	-0.	-0.05	-0.01
0.	350.	1500.	55.78	55.77	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	56.39	56.38	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	57.00	56.99	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	57.61	57.60	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	58.22	58.21	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	58.83	58.82	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	59.44	59.43	-0.01	-0.	-0.05	-0.01
0.	550.	1500.	60.05	60.04	-0.01	-0.	-0.05	-0.01
0.	300.	1500.	60.66	60.65	-0.01	-0.	-0.05	-0.01
0.	350.	1500.	61.27	61.26	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	61.88	61.87	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	62.49	62.48	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	63.10	63.09	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	63.71	63.70	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	64.32	64.31	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	64.93	64.92	-0.01	-0.	-0.05	-0.01
0.	550.	1500.	65.54	65.53	-0.01	-0.	-0.05	-0.01
0.	300.	1500.	66.15	66.14	-0.01	-0.	-0.05	-0.01
0.	350.	1500.	66.76	66.75	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	67.37	67.36	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	67.98	67.97	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	68.59	68.58	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	69.20	69.19	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	69.81	69.80	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	70.42	70.41	-0.01	-0.	-0.05	-0.01
0.	550.	1500.	71.03	71.02	-0.01	-0.	-0.05	-0.01
0.	300.	1500.	71.64	71.63	-0.01	-0.	-0.05	-0.01
0.	350.	1500.	72.25	72.24	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	72.86	72.85	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	73.47	73.46	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	74.08	74.07	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	74.69	74.68	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	75.30	75.29	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	75.91	75.90	-0.01	-0.	-0.05	-0.01
0.	550.	1500.	76.52	76.51	-0.01	-0.	-0.05	-0.01
0.	300.	1500.	77.13	77.12	-0.01	-0.	-0.05	-0.01
0.	350.	1500.	77.74	77.73	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	78.35	78.34	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	78.96	78.95	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	79.57	79.56	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	80.18	80.17	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	80.79	80.78	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	81.40	81.39	-0.01	-0.	-0.05	-0.01
0.	550.	1500.	82.01	82.00	-0.01	-0.	-0.05	-0.01
0.	300.	1500.	82.62	82.61	-0.01	-0.	-0.05	-0.01
0.	350.	1500.	83.23	83.22	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	83.84	83.83	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	84.45	84.44	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	85.06	85.05	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	85.67	85.66	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	86.28	86.27	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	86.89	86.88	-0.01	-0.	-0.05	-0.01
0.	550.	1500.	87.50	87.49	-0.01	-0.	-0.05	-0.01
0.	300.	1500.	88.11	88.10	-0.01	-0.	-0.05	-0.01
0.	350.	1500.	88.72	88.71	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	89.33	89.32	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	89.94	89.93	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	90.55	90.54	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	91.16	91.15	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	91.77	91.76	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	92.38	92.37	-0.01	-0.	-0.05	-0.01
0.	550.	1500.	92.99	92.98	-0.01	-0.	-0.05	-0.01
0.	300.	1500.	93.60	93.59	-0.01	-0.	-0.05	-0.01
0.	350.	1500.	94.21	94.20	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	94.82	94.81	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	95.43	95.42	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	96.04	96.03	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	96.65	96.64	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	97.26	97.25	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	97.87	97.86	-0.01	-0.	-0.05	-0.01
0.	550.	1500.	98.48	98.47	-0.01	-0.	-0.05	-0.01
0.	300.	1500.	99.09	99.08	-0.01	-0.	-0.05	-0.01
0.	350.	1500.	99.70	99.69	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	100.31	100.30	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	100.92	100.91	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	101.53	101.52	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	102.14	102.13	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	102.75	102.74	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	103.36	103.35	-0.01	-0.	-0.05	-0.01
0.	550.	1500.	103.97	103.96	-0.01	-0.	-0.05	-0.01
0.	300.	1500.	104.58	104.57	-0.01	-0.	-0.05	-0.01
0.	350.	1500.	105.19	105.18	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	105.80	105.79	-0.01	-0.	-0.05	-0.01
0.	400.	1500.	106.41	106.40	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	107.02	107.01	-0.01	-0.	-0.05	-0.01
0.	450.	1500.	107.63	107.62	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	108.24	108.23	-0.01	-0.	-0.05	-0.01
0.	500.	1500.	108.85	108.84	-0.01	-0.	-0.05	-0.01
0.	550.	1500.	10.					

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR
00	450	1000	3540	3535	00	06	14
10	450	1500	12651	12646	00	01	04
10	500	1000	15225	15215	00	02	18
10	550	1000	17876	17863	00	04	20
10	550	1500	2676	2674	00	02	06
20	300	1500	6415	6416	01	08	07
20	350	1500	2884	2882	01	06	06
20	400	1500	8669	8669	01	18	08
20	450	1500	3056	3053	01	05	02
20	450	1500	11019	11016	01	05	05
20	450	1500	13461	13454	01	05	09
20	450	1500	16348	16337	01	03	06
20	500	1500	18208	18203	01	15	10
20	500	1500	2515	2514	01	10	03
30	300	1500	6981	6981	01	05	07
30	350	1500	2675	2673	00	05	01
30	350	1500	9127	9126	01	06	04
30	400	1500	11902	11899	00	08	08
30	450	1500	13139	13132	00	40	06
30	450	1500	14030	14023	00	27	07
30	500	1500	13708	13705	00	02	05
30	500	1500	14837	14838	00	02	08
40	300	1500	2288	2288	00	04	01
40	350	1500	7688	7688	00	08	06
40	350	1500	2414	2413	00	16	06
40	400	1500	29108	29106	00	03	04
40	450	1500	2932	2930	00	05	05
40	450	1500	3039	3029	00	04	05
40	450	1500	10603	10598	00	09	05
40	500	1500	3559	3557	00	09	03
40	500	1500	11229	11225	00	09	03

WEAPON COEFFICIENTS FOR IDNO 18

CFORM1 = 0.0
 CFORM2 = 0.0168950
 I TYPE = 1
 I BOTH = 2
 DKG1 = 0.0073290
 DKG2 = 0.1716599
 I REF = 1
 DMAX = 5.00
 DM1 = 0.0
 DM2 = 0.3800000
 VE = 0.0
 DT1 = 2.00
 VMUZ =
 FN =
 DS = 0.6617000
 SL = -0.0002690

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TABLES TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR
0.	300.	300.	1743.	4.85	85.	56	4.88
0.	300.	1000.	2591.	9.60	29.	1.0	1.13
0.	350.	1100.	2924.	3.29	132.	0.5	1.12
0.	400.	1200.	1855.	10.95	33.	0.5	1.04
0.	450.	1300.	2004.	10.97	205.	0.3	1.50
0.	500.	1400.	3212.	13.56	306.	0.2	1.25
0.	550.	1500.	2004.	11.99	441.	0.1	2.40
0.	600.	1600.	3138.	13.14	161.	0.3	2.37
0.	650.	1700.	2191.	12.19	118.	0.3	2.34
0.	700.	1800.	3660.	13.66	299.	0.5	2.66
0.	750.	1900.	2260.	12.27	155.	0.3	3.58
10.	300.	1500.	3896.	9.27	233.	0.2	0.91
10.	350.	1500.	1546.	12.26	83.	0.2	0.96
10.	400.	2000.	2565.	9.13	12.	0.3	0.37
10.	450.	2000.	1673.	13.06	126.	0.3	0.76
10.	500.	2500.	3077.	1653.	192.	0.2	0.28
10.	550.	2500.	1272.	1883.	61.	0.2	1.75
10.	600.	2000.	2075.	1379.	296.	0.2	1.52
10.	650.	2500.	3400.	1887.	402.	0.2	1.52
10.	700.	2500.	2163.	1372.	19.	0.2	1.52
10.	750.	2500.	3823.	1446.	219.	0.2	1.52
10.	800.	2500.	3957.	1448.	40.	0.2	1.52
10.	850.	2500.	1519.	1454.	12.	0.2	1.52
20.	300.	2500.	1274.	1454.	12.	0.2	1.52
20.	350.	2500.	1746.	1454.	12.	0.2	1.52
20.	400.	2500.	1799.	1454.	12.	0.2	1.52
20.	450.	2500.	1961.	1454.	12.	0.2	1.52
20.	500.	3000.	3269.	1454.	12.	0.2	1.52

DEG	TAS	ALT	NAVAIR OL-1C-11-1 BALLISTICS TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR	DIST
-20.	450.	1500.	2579.	7.53	0.27	2.97	-4.74	74
-20.	450.	1500.	2674.	14.13	0.38	5.34	-7.25	25
-20.	500.	1500.	2733.	17.50	0.15	5.92	-1.62	73
-20.	550.	1500.	3757.	16.56	0.62	8.87	-10.73	16
-20.	550.	1500.	3858.	17.56	0.06	0.90	-1.84	4
-30.	300.	1500.	1762.	16.56	-0.02	-0.16	-1.32	29
-30.	350.	1500.	1871.	12.22	0.13	0.08	-0.49	00
-30.	350.	1500.	2814.	16.51	-0.02	-0.12	-0.40	43
-30.	400.	2000.	2323.	14.10	0.15	-0.03	-0.34	3
-30.	400.	2000.	3111.	16.19	-0.00	-0.07	-0.38	19
-30.	450.	2000.	3241.	17.93	0.28	3.70	-0.15	43
-30.	450.	2000.	3256.	15.98	0.07	0.43	-0.19	54
-30.	500.	2500.	3280.	19.92	0.37	3.98	-0.96	26
-30.	500.	2500.	3505.	17.95	0.00	0.00	-0.42	16
-30.	550.	2500.	3889.	19.76	0.65	7.00	-3.16	96
-30.	550.	2500.	3620.	17.95	0.34	2.13	-0.73	42
-40.	300.	2500.	1886.	19.46	0.04	0.23	-0.09	99
-40.	300.	2500.	2401.	17.29	-0.04	-0.21	-0.34	44
-40.	350.	2500.	2010.	18.60	0.09	0.24	-0.21	34
-40.	350.	2500.	2670.	18.57	0.05	0.29	-0.44	11
-40.	400.	3000.	2317.	18.20	-0.10	-0.98	-0.26	38
-40.	400.	3000.	2823.	18.57	0.02	0.12	-0.18	18
-40.	450.	3000.	2438.	19.25	0.22	3.00	-0.20	69
-40.	450.	3000.	3038.	18.75	0.36	5.10	-0.99	52
-40.	500.	3500.	3268.	22.10	0.00	0.05	-0.05	21
-40.	500.	3500.	3292.	19.39	0.58	8.68	-1.81	12
-40.	550.	3500.	3338.	21.31	0.35	4.30	-0.52	17
-45.	300.	2500.	1682.	18.89	0.06	0.68	-1.11	17
-45.	300.	2500.	2251.	12.84	-0.04	-0.26	-0.19	11
-45.	350.	3000.	1971.	18.29	0.06	0.68	-0.00	52
-45.	350.	3000.	2493.	19.73	-0.04	-0.22	-0.52	20
-45.	400.	3000.	2703.	21.89	0.13	2.65	-1.49	12
-45.	400.	3000.	2722.	19.10	-0.05	-0.28	-0.69	27
-45.	450.	3500.	2259.	21.55	-0.02	-0.07	-0.91	41
-45.	450.	3500.	2549.	23.19	0.05	0.28	-0.44	44

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
-45:	550:	4500:	14.49	15.00	0.58	3.99	-3.92
-45:	550:	7000:	23.69	23.99	0.30	1.26	-1.08
-60:	300:	4000:	13.17	13.12	0.05	0.10	-0.40
-60:	350:	11000:	38.17	38.04	-0.13	0.33	-0.30
-60:	350:	12000:	12.40	12.44	0.04	-0.34	-0.48
-60:	400:	13000:	40.80	40.64	-0.16	0.39	0.78
-60:	400:	15000:	15.53	15.54	0.01	0.09	0.18
-60:	450:	15500:	16.85	16.93	0.08	0.45	0.39
-60:	500:	14000:	16.21	16.98	0.77	0.50	1.07
-60:	500:	16500:	20.04	20.22	0.18	0.89	1.23
-60:	550:	17000:	27.34	27.12	-0.22	0.47	-0.27
-60:	550:	15000:	21.43	21.83	0.40	1.87	2.07
-60:	550:	15000:	48.49	48.32	-0.17	0.35	-1.97

WEAPON COEFFICIENTS FOR IDNO 20

CFORM1 = 2.2572994
 CFORM2 = 0.0111360
 I TYPE = 1
 I80TH = 2
 DKG1 = 0.0081750
 DKG2 = 0.1688499
 IREF = 1
 DMAX = 5.00
 DM1 = 0.3200000
 DM2 = 0.4100000
 VE = 0.0
 DTI = 2.00
 VMUZ = 0.0
 DS = 4.0599995
 SL = 0.0

NAVAIR 01-1C-1T-1 BALLISTICS TABLES

NPS MODIFIED BOEING ALGORITHM

DEG	TAS	ALT	TIME	TIME	TIME	DIFFERENCES	PER CENT	ERROR
							TIME	DIST
10.	300.	500.	9.87.	3687.	9.84	3670.	-0.03	-0.27
10.	300.	3000.	21.52	5106.	21.59	5128.	-0.07	-0.42
10.	350.	500.	10.67	5136.	10.65	5128.	-0.02	-0.42
10.	350.	3000.	22.24	5741.	22.33	5783.	-0.09	-0.72
10.	400.	500.	11.40	4950.	11.40	4909.	-0.04	-0.37
10.	400.	3000.	22.90	6322.	23.01	6369.	-0.11	-0.47
10.	450.	500.	12.16	5527.	12.05	5424.	-0.11	-0.86
10.	450.	3000.	23.50	6860.	23.59	6875.	-0.09	-1.22
10.	500.	500.	12.83	6071.	12.66	5891.	-0.17	-0.86
10.	500.	3000.	24.05	7363.	24.11	7332.	-0.06	-2.27
10.	550.	500.	13.45	6583.	13.25	6360.	-0.20	-0.39
10.	550.	3000.	24.55	7838.	24.63	7788.	-0.08	-0.64
10.	300.	15000.	29.11	3552.	29.10	3533.	-0.01	-0.52
0.	300.	15000.	59.27	4066.	59.42	4037.	-0.32	-0.05
0.	350.	15000.	59.45	7176.	59.77	7203.	-0.32	-0.72
0.	400.	15000.	59.76	4556.	59.44	4494.	-0.33	-0.35
0.	450.	15000.	59.60	5024.	60.09	4893.	-0.49	-1.37
0.	500.	15000.	60.04	5473.	60.37	5257.	-0.33	-2.40
0.	550.	15000.	60.29	9002.	60.75	8451.	-0.44	-3.94
0.	300.	15000.	60.50	5904.	60.62	5628.	-0.12	-0.10
0.	350.	15000.	60.81	5532.	60.87	5288.	-0.06	-4.68
-10.	300.	2500.	13.61	3367.	13.63	3348.	-0.02	-0.59
-10.	350.	3000.	13.23	4738.	13.22	4740.	-0.00	-0.06
-10.	350.	3500.	15.18	4898.	15.18	4914.	-0.00	-0.32
-10.	400.	1500.	18.05	4115.	18.13	4057.	-0.08	-1.31
-10.	400.	3500.	17.09	5600.	17.11	5618.	-0.02	-0.31

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WEAPON COEFFICIENTS FOR IDNO 21

CFORM1 = 2.240394
 CFORM2 = 0.117800
 ITYPE = 1
 IBOOTH = 2
 DKG1 = 0.0
 DKG2 = 0.0
 IREF = 1
 OMAX = 5.00
 DM1 = 0.0
 DM2 = 0.0
 VE = 0.0
 DTI = 1.62
 VMUZ =
 FN =
 0:
 0:
 DS = 4.0000000
 SL = 0.0

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR
10.	400.	500.	12.16	20	0.04	0.36	93
10.	400.	300.	12.51	25.98	0.47	1.82	1.50
10.	450.	500.	12.94	13.00	0.06	0.50	1.92
10.	450.	300.	12.16	26.67	0.51	1.05	1.33
10.	500.	500.	13.16	27.32	0.10	0.22	1.08
10.	500.	300.	13.75	27.31	0.57	2.46	1.22
10.	550.	500.	14.26	27.36	0.57	2.08	1.36
10.	550.	300.	17.21	27.33	0.17	1.34	1.56
0.	400.	1500.	13.15	25.28	0.07	1.84	1.22
0.	400.	1500.	13.39	25.49	0.19	2.43	1.68
0.	450.	1500.	13.39	25.49	0.10	1.46	1.10
0.	450.	1000.	13.34	25.52	0.18	1.77	1.30
0.	500.	1500.	10.60	25.77	0.20	2.92	1.06
0.	500.	1500.	10.79	25.77	0.28	2.69	1.70
0.	550.	1500.	13.42	25.00	0.21	2.99	1.30
0.	550.	3000.	11.72	25.58	0.34	2.22	2.73
10.	400.	2000.	11.34	25.06	0.28	2.05	2.39
10.	450.	2000.	11.03	25.31	0.44	2.53	1.95
10.	450.	3500.	11.99	25.43	0.28	2.34	3.32
10.	500.	2000.	10.74	25.46	0.40	2.37	3.85
10.	500.	2000.	10.28	25.62	0.60	3.74	2.85
10.	550.	2000.	11.48	25.22	0.72	3.89	4.43
10.	550.	3000.	12.08	25.14	0.80	3.79	4.39
20.	400.	3000.	12.50	25.89	0.33	2.65	3.33
20.	400.	4500.	12.00	25.51	0.59	3.22	4.53
20.	450.	3000.	11.88	25.27	0.62	3.82	3.76
20.	450.	3000.	11.78	25.47	0.61	3.40	3.82
20.	500.	5000.	11.25	25.01	0.76	3.56	2.24

WEAPON COEFFICIENTS FOR IDNO 22

CFORM1 = 0.0
 CFORM2 = 0.0230625
 ITYPE = 1
 I80TH = 2
 DKG1 = 0.0097670
 DKG2 = 0.2328700
 IREF = 1
 DMAX = 5.00
 DM1 = 0.0
 DM2 = 0.3800000
 VE = 0.0
 DTI = 1.62
 VMUZ =
 FN =
 DS = 0.6790000
 SL = -.0003030

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS DIST TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR
0.	300.	200.	4.07	4.00	-0.07	1.69	-5.39
0.	300.	800.	8.83	8.79	-0.04	-1.04	-0.70
0.	350.	200.	4.13	4.06	-0.07	-1.19	-7.44
0.	350.	900.	9.57	9.55	-0.02	-0.18	-0.58
0.	400.	200.	4.19	4.10	-0.09	-2.15	-10.72
0.	400.	1000.	10.24	10.27	0.03	-0.05	-1.11
0.	450.	200.	4.24	4.13	-0.11	-2.62	-15.24
0.	450.	1100.	10.94	10.94	0.00	-0.06	-2.54
0.	500.	200.	4.29	4.15	-0.14	-3.31	-21.29
0.	500.	1200.	11.57	11.55	-0.02	-0.16	-2.43
0.	550.	200.	4.33	4.16	-0.17	-3.90	-25.38
0.	550.	1200.	11.63	11.52	-0.11	-0.59	-10.19
0.	600.	200.	4.38	4.26	-0.12	-0.44	-3.19
10.	300.	1500.	10.58	10.40	-0.18	-0.48	-0.65
10.	350.	1500.	10.68	10.41	-0.27	-0.11	-0.19
10.	400.	1500.	10.78	10.34	-0.44	0.29	-0.92
10.	450.	1500.	10.88	10.58	-0.30	0.22	-0.89
10.	500.	2000.	13.11	13.05	-0.06	0.54	-1.17
10.	550.	2000.	13.21	13.17	-0.04	0.79	-1.88
10.	600.	2000.	13.31	13.20	-0.11	0.06	-0.74
10.	650.	2700.	15.06	15.06	0.00	1.40	-16.20
10.	700.	2000.	15.16	15.24	0.08	0.70	-2.12
10.	750.	2000.	15.26	15.35	0.09	0.95	-2.09
20.	300.	2000.	11.54	11.51	-0.03	-0.24	-0.04
20.	350.	2000.	11.64	11.62	-0.02	-0.03	-0.03
20.	400.	2000.	11.74	11.72	-0.02	-0.03	-0.04
20.	450.	2500.	13.47	13.40	-0.07	0.21	-0.16

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR	DIST
-20.	450.	1500.	8.11	31	20	45	91	-3.08
-20.	450.	1500.	13.21	8.32	0.11	20.83	-1.08	-1.08
-20.	450.	1500.	13.07	13.31	0.24	4.58	-1.08	-1.08
-20.	450.	1500.	17.80	13.42	0.60	1.99	-1.08	-1.08
-20.	450.	1500.	15.32	15.20	0.40	7.59	-1.08	-1.08
-30.	300.	1500.	17.17	12.04	0.03	0.25	-1.08	-1.08
-30.	300.	1500.	12.78	12.87	0.09	0.23	-1.08	-1.08
-30.	300.	1500.	16.05	14.02	0.03	1.19	-1.08	-1.08
-30.	300.	1500.	14.96	14.07	0.11	0.22	-1.08	-1.08
-30.	300.	1500.	18.74	13.77	0.13	2.24	-1.08	-1.08
-30.	300.	1500.	13.69	13.99	0.25	0.65	-1.08	-1.08
-30.	300.	1500.	15.79	15.89	0.38	3.83	-1.08	-1.08
-30.	300.	1500.	10.56	11.27	0.50	5.87	-1.08	-1.08
-30.	300.	1500.	15.68	15.38	0.70	2.85	-1.08	-1.08
-30.	300.	1500.	17.62	11.80	0.50	6.85	-1.08	-1.08
-30.	300.	1500.	10.63	10.65	0.01	1.05	-1.08	-1.08
-40.	300.	1500.	17.34	10.62	0.05	1.33	-1.08	-1.08
-40.	300.	1500.	11.95	11.16	0.05	0.23	-1.08	-1.08
-40.	300.	1500.	10.20	10.16	0.04	0.31	-1.08	-1.08
-40.	300.	1500.	16.95	16.09	0.05	0.43	-1.08	-1.08
-40.	300.	1500.	22.95	12.55	0.00	0.63	-1.08	-1.08
-40.	300.	1500.	22.82	16.89	0.20	1.45	-1.08	-1.08
-40.	300.	1500.	22.69	22.38	0.38	2.45	-1.08	-1.08
-40.	300.	1500.	22.59	22.51	0.08	1.57	-1.08	-1.08
-40.	300.	1500.	22.56	22.49	0.07	1.72	-1.08	-1.08
-40.	300.	1500.	22.50	22.45	0.05	2.04	-1.08	-1.08
-40.	300.	1500.	22.48	22.41	0.07	2.27	-1.08	-1.08
-40.	300.	1500.	22.40	22.35	0.05	2.41	-1.08	-1.08
-40.	300.	1500.	22.36	22.31	0.05	2.60	-1.08	-1.08
-40.	300.	1500.	22.30	22.25	0.05	2.79	-1.08	-1.08
-40.	300.	1500.	22.25	22.20	0.05	2.91	-1.08	-1.08
-40.	300.	1500.	22.20	22.15	0.05	3.06	-1.08	-1.08
-40.	300.	1500.	22.15	22.10	0.05	3.21	-1.08	-1.08
-40.	300.	1500.	22.10	22.05	0.05	3.37	-1.08	-1.08
-40.	300.	1500.	22.05	22.00	0.05	3.53	-1.08	-1.08
-40.	300.	1500.	22.00	21.95	0.05	3.69	-1.08	-1.08
-40.	300.	1500.	21.95	21.90	0.05	3.84	-1.08	-1.08
-40.	300.	1500.	21.90	21.85	0.05	4.00	-1.08	-1.08
-40.	300.	1500.	21.85	21.80	0.05	4.17	-1.08	-1.08
-40.	300.	1500.	21.80	21.75	0.05	4.34	-1.08	-1.08
-40.	300.	1500.	21.75	21.70	0.05	4.51	-1.08	-1.08
-40.	300.	1500.	21.70	21.65	0.05	4.68	-1.08	-1.08
-40.	300.	1500.	21.65	21.60	0.05	4.85	-1.08	-1.08
-40.	300.	1500.	21.60	21.55	0.05	5.02	-1.08	-1.08
-40.	300.	1500.	21.55	21.50	0.05	5.19	-1.08	-1.08
-40.	300.	1500.	21.50	21.45	0.05	5.36	-1.08	-1.08
-40.	300.	1500.	21.45	21.40	0.05	5.53	-1.08	-1.08
-40.	300.	1500.	21.40	21.35	0.05	5.70	-1.08	-1.08
-40.	300.	1500.	21.35	21.30	0.05	5.87	-1.08	-1.08
-40.	300.	1500.	21.30	21.25	0.05	6.04	-1.08	-1.08
-40.	300.	1500.	21.25	21.20	0.05	6.21	-1.08	-1.08
-40.	300.	1500.	21.20	21.15	0.05	6.38	-1.08	-1.08
-40.	300.	1500.	21.15	21.10	0.05	6.55	-1.08	-1.08
-40.	300.	1500.	21.10	21.05	0.05	6.72	-1.08	-1.08
-40.	300.	1500.	21.05	21.00	0.05	6.89	-1.08	-1.08
-40.	300.	1500.	21.00	20.95	0.05	7.06	-1.08	-1.08
-40.	300.	1500.	20.95	20.90	0.05	7.23	-1.08	-1.08
-40.	300.	1500.	20.90	20.85	0.05	7.40	-1.08	-1.08
-40.	300.	1500.	20.85	20.80	0.05	7.57	-1.08	-1.08
-40.	300.	1500.	20.80	20.75	0.05	7.74	-1.08	-1.08
-40.	300.	1500.	20.75	20.70	0.05	7.91	-1.08	-1.08
-40.	300.	1500.	20.70	20.65	0.05	8.08	-1.08	-1.08
-40.	300.	1500.	20.65	20.60	0.05	8.25	-1.08	-1.08
-40.	300.	1500.	20.60	20.55	0.05	8.42	-1.08	-1.08
-40.	300.	1500.	20.55	20.50	0.05	8.59	-1.08	-1.08
-40.	300.	1500.	20.50	20.45	0.05	8.76	-1.08	-1.08
-40.	300.	1500.	20.45	20.40	0.05	8.93	-1.08	-1.08
-40.	300.	1500.	20.40	20.35	0.05	9.10	-1.08	-1.08
-40.	300.	1500.	20.35	20.30	0.05	9.27	-1.08	-1.08
-40.	300.	1500.	20.30	20.25	0.05	9.44	-1.08	-1.08
-40.	300.	1500.	20.25	20.20	0.05	9.61	-1.08	-1.08
-40.	300.	1500.	20.20	20.15	0.05	9.78	-1.08	-1.08
-40.	300.	1500.	20.15	20.10	0.05	9.95	-1.08	-1.08
-40.	300.	1500.	20.10	20.05	0.05	10.12	-1.08	-1.08
-40.	300.	1500.	20.05	20.00	0.05	10.29	-1.08	-1.08
-40.	300.	1500.	20.00	19.95	0.05	10.46	-1.08	-1.08
-40.	300.	1500.	19.95	19.90	0.05	10.63	-1.08	-1.08
-40.	300.	1500.	19.90	19.85	0.05	10.80	-1.08	-1.08
-40.	300.	1500.	19.85	19.80	0.05	10.97	-1.08	-1.08
-40.	300.	1500.	19.80	19.75	0.05	11.14	-1.08	-1.08
-40.	300.	1500.	19.75	19.70	0.05	11.31	-1.08	-1.08
-40.	300.	1500.	19.70	19.65	0.05	11.48	-1.08	-1.08
-40.	300.	1500.	19.65	19.60	0.05	11.65	-1.08	-1.08
-40.	300.	1500.	19.60	19.55	0.05	11.82	-1.08	-1.08
-40.	300.	1500.	19.55	19.50	0.05	11.99	-1.08	-1.08
-40.	300.	1500.	19.50	19.45	0.05	12.16	-1.08	-1.08
-40.	300.	1500.	19.45	19.40	0.05	12.33	-1.08	-1.08
-40.	300.	1500.	19.40	19.35	0.05	12.50	-1.08	-1.08
-40.	300.	1500.	19.35	19.30	0.05	12.67	-1.08	-1.08
-40.	300.	1500.	19.30	19.25	0.05	12.84	-1.08	-1.08
-40.	300.	1500.	19.25	19.20	0.05	13.01	-1.08	-1.08
-40.	300.	1500.	19.20	19.15	0.05	13.18	-1.08	-1.08
-40.	300.	1500.	19.15	19.10	0.05	13.35	-1.08	-1.08
-40.	300.	1500.	19.10	19.05	0.05	13.52	-1.08	-1.08
-40.	300.	1500.	19.05	19.00	0.05	13.69	-1.08	-1.08
-40.	300.	1500.	19.00	18.95	0.05	13.86	-1.08	-1.08
-40.	300.	1500.	18.95	18.90	0.05	14.03	-1.08	-1.08
-40.	300.	1500.	18.90	18.85	0.05	14.20	-1.08	-1.08
-40.	300.	1500.	18.85	18.80	0.05	14.37	-1.08	-1.08
-40.	300.	1500.	18.80	18.75	0.05	14.54	-1.08	-1.08
-40.	300.	1500.	18.75	18.70	0.05	14.71	-1.08	-1.08
-40.	300.	1500.	18.70	18.65	0.05	14.88	-1.08	-1.08
-40.	300.	1500.	18.65	18.60	0.05	15.05	-1.08	-1.08
-40.	300.	1500.	18.60	18.55	0.05	15.22	-1.08	-1.08
-40.	300.	1500.	18.55	18.50	0.05	15.39	-1.08	-1.08
-40.	300.	1500.	18.50	18.45	0.05	15.56	-1.08	-1.08
-40.	300.	1500.	18.45	18.40	0.05	15.73	-1.08	-1.08
-40.	300.	1500.	18.40	18.35	0.05	15.90	-1.08	-1.08
-40.	300.	1500.	18.35	18.30	0.05	16.07	-1.08	-1.08
-40.	300.	1500.	18.30	18.25	0.05	16.24	-1.08	-1.08
-40.	300.	1500.	18.25	18.20	0.05	16.41	-1.08	-1.08
-40.	300.	1500.	18.20	18.15	0.05	16.58	-1.08	-1.08
-40.	300.	1500.	18.15	18.10	0.05	16.75	-1.08	-1.08
-40.	300.	1500.	18.10	18.05	0.05	16.92	-1.08	-1.08
-40.	300.	1500.	18.05	18.00	0.05	17.09	-1.08	-1.08
-40.	300.	1500.	18.00	17.95	0.05	17.26	-1.08	-1.08
-40.	300.	1500.	17.95	17.90	0.05	17.43	-1.08	-1.08
-40.	300.	1500.	17.90	17.85	0.05	17.60	-1.08	-1.08
-40.	300.	1500.	17.85	17.80	0.05	17.77	-1.08	-1.08
-40.	300.	1500.	17.80	17.75	0.05	17.94	-1.08	-1.08
-40.	300.	1500.	17.75	17.70	0.05	18.11	-1.08	-1.08
-40.	300.	1500.	17.70	17.65	0.05	18.28	-1.08	-1.08
-40.	300.	1500.	17.65	17.60	0.05	18.45	-1.08	-1.08
-40.	300.	1500.	17.60	17.55	0.05	18.62	-1.08	-1.08
-40.	300.	1500.	17.55	17.50	0.05	18.79	-1.08	-1.08
-40.	300.	1500.	17.50	17.45	0.05	18.96	-1.08	-1.08
-40.	300.	1500.	17.45	17.40	0.05	19.13	-1.08	-1.08
-40.	300.	1500.	17.40	17.35	0.05	19.30	-1.08	-1.08
-40.	300.	1500.	17.35	17.30	0.05	19.47	-1.08	-1.08
-40.	300.	1500.	17.30	17.25	0.05	19.64	-1.08	-1.08
-40.	300.	1500.	17.25	17.20	0.05	19.81	-1.08	-1.08
-40.	300.	1500.	17.20	17.15	0.05	19.98	-1.08	-1.08
-40.	300.	1500.	17.15	17.10	0.05	20.15	-1.08	-1.08
-40.	300.	1500.	17.10	17.05	0.05	20.32	-1.08	-1.08
-40.	300.	1500.	17.05	17.00	0.05	20.49	-1.08	-1.08
-40.	300.	1500.	17.00	16.95	0.05	20.66	-1.08	-1.08
-40.	300.	1500.	16.95	16.90	0.05	20.83	-1.08	-1.08
-40.	300.	1500.	16.90	16.85	0.05	21.00	-1.08	-1.08
-40.	300.	1500.	16.85	16.80	0.05	21.17	-1.08	-1.08
-40.	300.	1500.	16.80	16.75	0.05	21.34	-1.08	-1.08
-40.	300.	1500.	16.75	16.70	0.05	21.51	-1.08	-1.08
-40.	300.	1500.	16.70	16.65	0.05	21.68	-1.08	-1.08
-40.	300.	1500.	16.65	16.60	0.05	21.85	-1.08	-1.08
-40.								

DEG	TAS	ALT	NAVAIR 01-1C-1T-1 BALLISTICS TIME	NAVIR 01-1C-1T-1 TABLES DIST	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	DIFFERENCES DIST	PER CENT TIME	PER CENT ERROR
-45.	550.	4500.	16.98	2396.	17.66	0.68	-117.	3.99	-4.89
-45.	550.	6000.	23.48	2562.	23.98	0.50	-179.	2.12	-3.08
-60.	300.	4000.	15.19	1251.	15.14	-0.05	6.	-0.35	0.46
-60.	350.	8500.	34.33	1483.	34.15	-0.18	13.	-0.53	0.54
-60.	350.	4000.	14.52	1339.	14.48	-0.04	22.	-0.25	1.32
-60.	350.	9500.	37.72	1632.	37.50	-0.22	14.	-0.19	0.78
-60.	400.	5000.	18.31	1508.	18.28	-0.03	31.	-0.61	1.53
-60.	400.	10000.	39.16	1745.	38.92	-0.24	19.	-0.25	0.90
-60.	450.	5500.	19.99	1613.	20.45	0.45	35.	-0.92	1.56
-60.	450.	10500.	40.66	1845.	40.45	-0.21	37.	-0.36	2.42
-60.	500.	6500.	23.82	1737.	24.01	0.19	31.	-0.01	1.46
-60.	550.	11500.	44.17	1956.	44.06	-0.11	43.	-0.01	0.65
-60.	550.	17000.	25.55	1819.	26.06	0.51	13.	-0.01	0.65
-60.	550.	12000.	45.72	2041.	45.72	-0.00	13.	-0.01	0.65

APPENDIX C

This appendix is a listing of the output from the cockpit of various A-6E aircraft recorded at the instant the weapon was released.

The following is a brief description of the parameter headings as they appear on the listing.

TAS = true airspeed in knots

TH = true heading in degrees relative to true north

WDIR = wind direction in degrees true

WKTS = wind speed in knots

GT = ground track in degrees true

GS = ground speed in knots

RA = release angle in degrees

VZ = vertical velocity in knots x 10

VSEP = vertical separation in feet

DA = depression angle (search radar) in degrees

SR = slant range to target in feet

TOF = time of fall in seconds

HIT = hit distance from target in feet

AZ = hit azimuth in clock code

TAS	TH	WDIR	WKTS	GT	GS	RA	VZ	VSEP	DA	SR	TDF	HIT	AZ
421.	86.	356.	10.	87.	421.	0.	6.	1389.	12.	6560.	8.	90.	430.
377.	86.	350.	14.	88.	375.	1.	8.	1415.	-13.	6010.	9.	90.	1130.
376.	86.	350.	11.	87.	374.	0.	1.	1415.	-13.	6030.	9.	60.	1230.
363.	75.	356.	10.	87.	361.	0.	4.	1388.	-14.	6400.	10.	40.	230.
382.	87.	357.	16.	89.	377.	-1.	6.	1127.	-13.	5560.	9.	140.	330.
377.	88.	45.	13.	88.	364.	-2.	19.	1356.	-14.	5590.	7.	100.	600.
377.	88.	11.	2.	88.	374.	-1.	16.	1466.	-14.	6240.	0.	50.	1230.
351.	49.	11.	20.	90.	414.	0.	17.	9270.	-14.	5740.	4.	160.	230.
415.	91.	233.	12.	92.	408.	0.	14.	4077.	-10.	5750.	0.	190.	1230.
362.	89.	38.	18.	90.	358.	0.	1.	5010.	-9.	3530.	5.	150.	600.
340.	88.	28.	14.	90.	330.	2.	15.	4510.	-7.	3790.	8.	20.	1030.
359.	88.	35.	19.	90.	354.	0.	2.	5100.	-6.	3370.	6.	40.	1830.
352.	89.	42.	12.	90.	351.	0.	2.	5160.	-8.	3390.	7.	100.	1200.
351.	77.	224.	20.	78.	341.	0.	3.	1793.	-11.	4410.	2.	110.	1200.
335.	82.	257.	20.	78.	360.	0.	3.	9610.	-13.	4610.	8.	130.	1530.
335.	79.	253.	19.	78.	353.	0.	3.	1185.	-10.	5130.	6.	70.	600.
335.	77.	253.	23.	77.	374.	0.	1.	1957.	-12.	5210.	8.	60.	100.
335.	77.	252.	19.	77.	362.	0.	3.	1057.	-11.	4690.	8.	1280.	1230.
325.	88.	222.	16.	91.	393.	0.	3.	9242.	-10.	4820.	0.	1280.	530.
405.	91.	222.	15.	91.	420.	0.	0.	1040.	-18.	5850.	5.	1170.	630.
372.	91.	185.	21.	90.	351.	1.	9.	1056.	-18.	5620.	4.	300.	1230.
370.	89.	88.	24.	89.	345.	1.	1.	9440.	-12.	4660.	0.	150.	1200.
321.	88.	68.	12.	88.	320.	0.	1.	9114.	-13.	4160.	7.	120.	200.
321.	88.	95.	11.	89.	315.	0.	7.	8291.	-13.	3900.	5.	400.	400.
331.	89.	82.	13.	89.	317.	0.	3.	8817.	-11.	4030.	6.	70.	1100.
354.	87.	3.	18.	92.	352.	0.	1.	8684.	-10.	4250.	2.	200.	1100.
351.	50.	350.	38.	95.	466.	-1.	7.	7779.	-9.	3890.	9.	240.	1200.
339.	89.	226.	31.	88.	364.	0.	0.	7447.	-10.	4260.	0.	100.	1130.
339.	90.	225.	28.	88.	353.	0.	1.	7447.	-10.	4200.	9.	180.	1200.
339.	90.	224.	28.	89.	408.	0.	4.	9087.	-9.	5830.	9.	240.	1300.
339.	90.	226.	21.	88.	414.	0.	8.	9109.	-10.	5480.	9.	110.	1200.
334.	89.	226.	28.	88.	381.	0.	1.	1190.	-12.	5410.	0.	130.	1200.
334.	89.	226.	28.	88.	381.	0.	0.	1190.	-12.	4600.	0.	0.	0.

TAS	TH	WDIR	WKTS	GT	GS	RA	VZ	VSEP	DA	SR	TOF	HIT	AZ
347.	89.	23.	8.	90.	343.	1.	6.	990.	12.	4670.	8.	0.	0.
349.	88.	15.	7.	89.	347.	1.	19.	959.	12.	4710.	8.	20.	430.
352.	88.	34.	10.	89.	353.	2.	1.	962.	12.	4760.	8.	40.	1100.
354.	88.	37.	10.	89.	358.	0.	0.	812.	12.	4550.	7.	30.	100.
359.	88.	37.	8.	89.	353.	0.	4.	988.	12.	4440.	7.	60.	1230.
340.	88.	37.	10.	90.	343.	0.	6.	980.	12.	4800.	8.	0.	0.
348.	88.	50.	8.	90.	351.	0.	0.	927.	12.	4460.	7.	60.	500.
354.	87.	29.	8.	90.	345.	0.	8.	934.	12.	4300.	7.	0.	0.
355.	87.	24.	17.	87.	349.	0.	0.	851.	12.	4270.	8.	0.	0.
321.	90.	266.	18.	92.	339.	0.	0.	1096.	11.	3800.	8.	30.	600.
322.	90.	269.	15.	90.	337.	0.	4.	990.	11.	4580.	8.	20.	900.
325.	90.	265.	16.	90.	325.	0.	0.	996.	11.	4610.	8.	50.	700.
324.	90.	264.	17.	90.	340.	0.	7.	1013.	11.	4730.	8.	60.	600.
336.	93.	249.	15.	92.	346.	0.	3.	967.	11.	4620.	8.	0.	0.
351.	90.	253.	16.	89.	341.	0.	1.	926.	11.	4470.	8.	100.	100.
353.	92.	251.	17.	91.	350.	0.	9.	989.	11.	4630.	8.	60.	600.
329.	90.	252.	16.	90.	342.	0.	4.	1062.	11.	4630.	8.	50.	400.
324.	90.	252.	14.	89.	352.	0.	1.	967.	11.	4700.	8.	20.	100.
348.	88.	255.	15.	89.	339.	0.	3.	1045.	11.	4530.	8.	0.	0.
341.	88.	28.	6.	89.	343.	1.	10.	1269.	11.	4810.	9.	20.	300.
303.	88.	21.	9.	89.	310.	1.	1.	1109.	11.	4330.	8.	50.	700.
308.	88.	17.	8.	90.	398.	1.	10.	1128.	11.	5450.	8.	20.	1100.
318.	88.	18.	9.	90.	384.	1.	5.	1152.	11.	5510.	8.	20.	1100.
320.	88.	27.	2.	88.	368.	0.	12.	1057.	11.	5000.	8.	30.	1200.
328.	88.	219.	24.	89.	344.	0.	3.	1084.	11.	4640.	7.	100.	1100.
320.	88.	240.	22.	89.	348.	0.	3.	1056.	11.	4740.	8.	30.	700.
315.	88.	20.	20.	89.	352.	0.	3.	964.	11.	4900.	8.	0.	0.
318.	88.	27.	22.	88.	349.	0.	4.	930.	11.	4650.	7.	0.	0.
308.	91.	275.	22.	93.	330.	0.	3.	1031.	11.	4440.	8.	0.	0.
311.	94.	275.	23.	94.	334.	0.	2.	1037.	11.	4570.	8.	50.	1200.
311.	94.	276.	22.	94.	334.	0.	0.	946.	11.	4520.	8.	0.	0.
310.	96.	274.	22.	96.	352.	0.	1.	946.	11.	4470.	7.	0.	0.
324.	93.	279.	22.	93.	352.	0.	3.	938.	11.	4620.	7.	30.	300.
324.	93.	270.	21.	92.	357.	0.	4.	1422.	11.	4560.	7.	40.	600.
301.	99.	267.	25.	98.	328.	0.	0.	1056.	11.	4790.	8.	40.	300.
312.	93.	268.	24.	93.	328.	0.	0.	1068.	11.	3930.	8.	0.	0.
										4820.	7.	30.	300.

TAS	TH	WDIR	WKTS	GT	GS	RA	VZ	VSEP	DA	SR	TQF	HIT	AZ
326.	93.	271.	24.	93.	350.	0.	1.	1003.	-12.	4740.	8.0	30.	200.
325.	94.	267.	26.	94.	350.	0.	0.	9921.	-10.	4740.	8.8	40.	200.
345.	89.	213.	6.	88.	428.	0.	6.	6422.	-19.	5500.	6.6	0.	200.
345.	89.	220.	5.	87.	363.	-1.	4.	5499.	-8.	3910.	5.5	0.	200.
337.	89.	203.	5.	88.	348.	0.	1.	4990.	-8.	3380.	5.6	60.	200.
346.	90.	254.	4.	89.	339.	0.	4.	5901.	-10.	3330.	6.5	200.	200.
373.	89.	7.	4.	89.	372.	-1.	2.	9314.	-12.	5810.	7.8	180.	1230.
342.	88.	13.	4.	88.	342.	-1.	1.	1019.	-11.	4850.	7.5	160.	1230.
342.	88.	15.	8.	89.	332.	0.	7.	7504.	-12.	3800.	7.1	140.	1230.
333.	88.	57.	12.	89.	332.	-1.	4.	8094.	-12.	4080.	7.7	100.	1100.
338.	89.	80.	25.	90.	334.	0.	2.	9944.	-8.	3900.	7.8	180.	1230.
358.	91.	39.	11.	90.	337.	0.	9.	557.	-12.	3610.	6.3	40.	100.
379.	84.	65.	11.	84.	351.	0.	1.	584.	-6.	3730.	6.5	50.	300.
410.	90.	390.	15.	46.	406.	0.	5.	9912.	-13.	3220.	8.1	200.	630.
366.	90.	292.	10.	90.	380.	0.	3.	1188.	-11.	5400.	9.7	170.	1230.
361.	91.	442.	16.	90.	373.	0.	3.	9288.	-10.	4870.	7.7	30.	200.
357.	91.	251.	12.	90.	373.	0.	9.	864.	-11.	4910.	7.7	0.	0.
353.	91.	257.	18.	91.	374.	0.	1.	9309.	-12.	4760.	7.8	40.	0.
353.	92.	256.	22.	88.	466.	-1.	7.	1149.	-9.	5390.	7.8	40.	0.
353.	92.	252.	26.	87.	385.	-1.	1.	1030.	-12.	6000.	8.0	200.	1230.
358.	95.	252.	36.	87.	393.	-1.	7.	1097.	-10.	5170.	8.7	120.	600.
357.	92.	243.	40.	89.	393.	-1.	0.	1838.	-11.	5320.	7.3	60.	600.
339.	92.	245.	36.	89.	369.	-1.	15.	9278.	-10.	4850.	7.7	0.	0.
339.	92.	32.	36.	88.	431.	0.	6.	1067.	-10.	4220.	6.6	100.	600.
325.	86.	345.	19.	87.	346.	-1.	9.	7702.	-10.	5970.	6.5	50.	500.
381.	88.	335.	19.	88.	377.	0.	8.	7723.	-10.	3770.	6.7	40.	1200.
344.	87.	338.	8.	88.	338.	0.	5.	4861.	-17.	4200.	6.4	50.	500.
361.	88.	353.	9.	89.	353.	0.	0.	6641.	-9.	3230.	6.6	50.	500.
344.	88.	239.	12.	89.	338.	1.	1.	9003.	-12.	3850.	6.4	30.	500.
362.	88.	40.	14.	90.	353.	1.	7.	956.	-11.	4620.	8.3	10.	200.
379.	88.	36.	13.	89.	371.	1.	8.	9339.	-12.	4790.	7.2	30.	230.
348.	88.	44.	11.	89.	338.	0.	3.	883.	-12.	4920.	8.1	0.	0.
354.	88.	19.	14.	90.	355.	0.	3.	884.	-12.	4330.	7.7	60.	1200.
333.	88.	123.	16.	90.	337.	-1.	6.	889.	-12.	4540.	7.7	0.	1000.

TAS	TH	WDIR	WKTS	GT	GS	RA	VZ	VSEP	DA	SR	TOF	HIT	AZ
3343	87	23	16	90	36	0	1	984	13	45280	08	0	0
3344	87	23	16	89	34	1	1	988	12	4380	7	60	1100
3352	87	26	14	89	46	0	1	943	12	4490	7	50	1500
3367	89	29	15	89	59	0	3	1197	11	4750	8	70	11230
3369	89	26	32	89	59	0	4	1181	12	6720	9	160	1200
3355	89	27	6	90	57	0	6	1959	12	6690	8	0	100
3359	90	24	47	90	55	1	6	980	12	4960	8	20	1530
3354	90	23	8	90	50	1	1	1056	12	5020	8	30	400
3354	91	23	8	91	51	1	1	901	12	5140	8	40	500
3354	91	30	2	89	55	1	1	695	12	5120	8	10	200
3353	89	39	48	91	58	0	6	464	10	4100	6	160	1000
3351	89	55	4	89	54	0	0	498	7	3540	5	100	300
3351	90	21	4	89	61	0	3	392	7	3580	5	100	100
3352	90	24	3	89	58	0	2	367	6	3140	5	100	130
3361	88	27	1	87	72	0	4	353	5	170	4	280	400
3343	88	22	4	86	52	0	0	500	7	350	5	100	400
3342	52	23	10	78	31	1	6	918	12	4400	7	160	1100
3329	77	25	9	77	33	1	3	913	12	4200	8	0	0
3329	77	25	6	79	33	1	0	943	13	4310	7	20	1100
3331	77	24	9	77	32	1	7	969	13	4200	8	20	1530
3337	76	22	10	48	25	0	1	887	12	4620	6	240	1130
3367	86	32	6	89	27	0	3	661	9	4620	6	30	4530
3377	87	30	1	89	34	0	1	1064	10	4260	8	0	700
3340	88	42	2	89	37	1	7	1107	11	5730	8	120	1000
3357	88	43	1	90	26	1	6	1174	13	6130	7	30	200
3367	88	43	2	90	22	1	6	1176	16	6250	8	60	100
3365	88	47	9	90	25	1	6	1176	17	6170	1	10	200
3323	93	40	1	92	46	1	6	1712	16	6220	7	180	300
3343	100	46	1	90	50	1	6	904	11	4520	7	100	200
3358	90	49	1	90	46	0	6	527	6	5080	6	120	300
3342	90	55	1	90	50	0	6	450	6	420	5	130	600
3342	90	59	7	90	49	0	3	439	6	3310	5	30	0
3329	90	53	8	90	36	1	4	379	6	2820	5	60	700
3330	90	55	4	90	32	0	1	328	5	261	4	0	60

TAS	TH	WDIR	WKTS	GT	GS	RA	VZ	VSEP	DA	SR	TOF	HIT	AZ
350.	90.	372.	5.	90.	355.	0.	0.	337.	-5.	2880.	4.5	30.	430.
343.	90.	296.	5.	90.	349.	0.	0.	315.	-4.	2690.	4.5	30.	600.
328.	89.	283.	4.	89.	332.	0.	4.	322.	-7.	2700.	4.5	0.	0.
326.	91.	261.	26.	91.	345.	0.	3.	864.	-9.	5650.	7.5	280.	1200.
321.	91.	264.	29.	90.	347.	-1.	1.	9050.	-12.	4440.	8.1	80.	1000.
339.	90.	261.	29.	89.	423.	-1.	6.	1076.	-12.	5210.	9.0	210.	1200.
334.	88.	354.	13.	89.	429.	0.	20.	1276.	-17.	6220.	10.3	190.	1500.
335.	88.	329.	15.	89.	357.	0.	7.	612.	-8.	5510.	8.6	140.	5300.
343.	88.	347.	15.	89.	333.	0.	0.	799.	-11.	3850.	7.7	160.	1200.
429.	88.	371.	14.	88.	428.	0.	4.	831.	-12.	4000.	6.6	150.	1500.
403.	86.	373.	18.	85.	415.	0.	0.	640.	-13.	4670.	10.1	180.	1230.
355.	87.	259.	18.	87.	417.	0.	0.	1544.	-12.	5010.	8.7	260.	1200.
350.	86.	133.	10.	86.	360.	-1.	5.	1173.	-17.	6090.	10.3	0.	0.
345.	86.	142.	8.	86.	427.	-1.	1.	1428.	-16.	5410.	9.3	70.	1030.
353.	81.	241.	29.	81.	354.	-1.	9.	1474.	-17.	5600.	5.6	30.	1200.
352.	85.	244.	29.	85.	359.	0.	3.	469.	-7.	4020.	5.5	140.	1200.
357.	96.	258.	20.	89.	372.	1.	6.	512.	-14.	3680.	8.2	160.	1600.
326.	88.	143.	8.	87.	363.	0.	2.	1506.	-15.	5080.	5.6	110.	5000.
324.	88.	145.	8.	89.	323.	0.	2.	1384.	-15.	5340.	9.9	170.	8000.
322.	90.	151.	6.	89.	321.	0.	0.	1392.	-16.	5150.	5.5	160.	4000.
356.	87.	154.	6.	89.	327.	0.	0.	1397.	-12.	4790.	9.9	0.	0.
353.	87.	127.	17.	89.	348.	-1.	1.	1099.	-13.	4620.	7.9	70.	2000.
346.	86.	13.	18.	89.	337.	0.	6.	999.	-13.	4670.	8.0	110.	3000.
423.	89.	256.	13.	89.	440.	0.	3.	1324.	-11.	6720.	5.3	0.	0.
436.	89.	263.	14.	88.	436.	0.	4.	1174.	-12.	7110.	9.7	60.	7300.
352.	90.	263.	16.	88.	382.	0.	1.	1199.	-11.	6990.	7.7	100.	5330.
345.	50.	262.	35.	85.	336.	0.	15.	1206.	-12.	5530.	1.9	150.	5330.
345.	91.	261.	38.	85.	338.	0.	13.	1151.	-14.	5890.	9.1	120.	5000.
339.	89.	268.	20.	89.	370.	0.	3.	1052.	-12.	5620.	8.8	150.	5000.
330.	89.	204.	23.	89.	371.	0.	1.	1102.	-11.	5620.	0.3	170.	5300.
336.	90.	258.	23.	89.	356.	0.	1.	984.	-11.	4780.	7.7	150.	5300.
337.	91.	268.	19.	90.	355.	-5.	4.	882.	-12.	4440.	4.5	150.	1200.
333.	88.	282.	21.	88.	353.	0.	50.	884.	-12.	4370.	7.4	700.	1100.

TAS	TH	WDIR	WKTS	GT	GS	RA	VZ	VSEP	DA	SR	TQF	HIT	AZ
339.	88.	281.	12.	88.	350.	-1.	5.	587.	-8.	3620.	0.	40.	330.
3340.	86.	2290.	15.	87.	350.	0.	2.	602.	-8.	3720.	19.	30.	330.
335.	86.	302.	13.	87.	343.	0.	0.	564.	-9.	3470.	5.	0.	0.
340.	88.	347.	12.	89.	351.	0.	4.	605.	-8.	3620.	5.	90.	100.
4251.	88.	347.	2.	88.	451.	0.	5.	553.	-9.	3480.	0.	300.	100.
335.	92.	279.	2.	92.	339.	0.	10.	767.	-12.	5120.	7.	160.	1230.
331.	92.	275.	4.	92.	333.	0.	0.	918.	-13.	4380.	7.	0.	0.
333.	92.	161.	2.	89.	333.	0.	1.	923.	-11.	4350.	7.	0.	0.
333.	86.	122.	1.	87.	339.	0.	4.	951.	-12.	4560.	7.	0.	0.
335.	89.	373.	15.	87.	360.	0.	3.	1142.	-11.	4510.	8.	300.	630.
3358.	89.	59.	8.	90.	343.	0.	6.	966.	-12.	4330.	8.	0.	0.
3369.	90.	347.	15.	90.	344.	0.	0.	1000.	-10.	4980.	10.	200.	630.
3352.	89.	347.	6.	90.	368.	0.	1.	955.	-10.	4850.	8.	180.	700.
3356.	89.	347.	25.	89.	361.	0.	3.	968.	-11.	4870.	8.	220.	630.
3349.	89.	347.	2.	89.	353.	0.	6.	1159.	-11.	4890.	8.	200.	1200.
3340.	89.	175.	8.	88.	358.	0.	7.	929.	-12.	4860.	6.	40.	400.
455.	91.	1200.	7.	88.	350.	0.	3.	997.	-11.	4780.	8.	140.	1200.
353.	80.	217.	8.	91.	458.	0.	14.	1027.	-9.	5170.	7.	280.	200.
355.	92.	214.	12.	79.	359.	0.	3.	949.	-12.	6650.	8.	60.	1200.
351.	92.	222.	18.	90.	361.	0.	1.	1022.	-12.	7950.	7.	10.	1130.
354.	91.	202.	12.	90.	366.	0.	9.	926.	-11.	6800.	7.	80.	100.
362.	93.	199.	4.	90.	357.	0.	3.	875.	-11.	6360.	9.	90.	300.
432.	56.	196.	4.	92.	364.	0.	2.	1021.	-11.	5860.	7.	80.	430.
427.	89.	144.	4.	56.	427.	0.	8.	1852.	-10.	5860.	5.	100.	430.
440.	91.	186.	5.	89.	422.	0.	2.	732.	-12.	4110.	6.	340.	1200.
405.	91.	186.	25.	91.	422.	0.	1.	723.	-11.	4780.	6.	260.	1200.
354.	47.	58.	13.	90.	465.	0.	18.	1041.	-10.	3650.	8.	0.	0.
342.	61.	265.	3.	48.	385.	0.	3.	1116.	-11.	3790.	4.	40.	600.
420.	61.	250.	13.	90.	366.	0.	16.	1102.	-11.	5020.	0.	140.	600.
450.	92.	256.	28.	90.	369.	0.	9.	990.	-11.	5040.	8.	160.	330.
221.	90.	219.	2.	89.	364.	0.	3.	854.	-11.	4630.	7.	150.	430.
359.	91.	359.	4.	91.	418.	0.	7.	988.	-10.	4830.	8.	180.	1230.
341.	92.	162.	4.	92.	351.	0.	3.	995.	-12.	4980.	8.	60.	600.
352.	93.	163.	4.	91.	341.	0.	9.	1108.	-11.	4670.	8.	0.	0.
336.	94.	1170.	5.	93.	337.	0.	1.	962.	-12.	4430.	7.	100.	500.
3340.	91.	1157.	6.	91.	337.	0.	0.	930.	-12.	4420.	8.	80.	600.

TAS	TH	WDIR	WKTS	GT	GS	RA	VZ	VSEP	DA	SR	TOF	HIT	AZ
340.	82.	157.	6.	81.	336.	0.	0.	951.	-13.	4410.	7.9	140.	500.
350.	77.	134.	6.	77.	344.	0.	1.	961.	-12.	4590.	8.0	0.	0.
370.	84.	137.	9.	85.	363.	-0.	1.	1120.	-13.	6090.	8.5	80.	130.
342.	83.	49.	1.	84.	330.	0.	1.	1091.	-13.	6790.	8.8	60.	1030.
335.	85.	50.	1.	86.	328.	0.	8.	1106.	-14.	6510.	8.4	60.	500.
337.	82.	59.	9.	83.	336.	-1.	6.	1101.	-13.	6630.	8.2	0.	430.
345.	81.	35.	1.	83.	333.	0.	1.	1159.	-14.	6870.	8.5	0.	0.
341.	82.	37.	0.	83.	334.	0.	3.	1104.	-13.	6780.	8.6	0.	0.
334.	81.	39.	2.	84.	333.	0.	1.	1109.	-14.	6920.	8.8	0.	0.
341.	82.	37.	5.	79.	335.	0.	2.	1204.	-15.	6840.	8.0	30.	0.
316.	78.	136.	3.	76.	331.	1.	7.	1109.	-14.	6650.	8.3	40.	430.
342.	77.	137.	1.	76.	335.	-0.	0.	996.	-14.	6110.	7.8	30.	300.
350.	79.	129.	1.	78.	346.	-0.	7.	1200.	-15.	6970.	7.7	60.	300.
342.	77.	135.	8.	78.	336.	-0.	4.	1244.	-13.	6310.	7.7	0.	0.
344.	80.	130.	10.	79.	327.	-0.	7.	897.	-13.	6070.	7.4	0.	0.
346.	81.	135.	11.	78.	339.	-1.	9.	874.	-13.	6120.	7.3	0.	0.
343.	80.	135.	12.	79.	338.	-1.	6.	933.	-13.	6350.	7.6	20.	100.
345.	79.	132.	11.	78.	337.	-1.	2.	910.	-13.	6220.	7.5	60.	100.
342.	80.	119.	10.	79.	336.	-0.	7.	952.	-15.	6490.	8.0	80.	1200.
438.	91.	241.	10.	91.	446.	-2.	15.	1055.	-12.	5120.	7.8	30.	1030.
321.	90.	211.	4.	90.	317.	1.	9.	814.	-11.	4200.	7.2	30.	1000.
319.	89.	305.	6.	90.	325.	0.	0.	704.	-10.	4040.	7.7	0.	0.
341.	90.	316.	9.	90.	323.	0.	6.	653.	-11.	3680.	6.7	0.	0.
345.	90.	265.	31.	90.	327.	0.	1.	605.	-11.	4810.	6.6	20.	100.
355.	91.	257.	17.	89.	357.	0.	2.	863.	-11.	4560.	7.4	0.	0.
352.	90.	226.	11.	89.	352.	1.	9.	921.	-11.	4790.	8.0	180.	1200.
351.	89.	206.	16.	87.	365.	1.	7.	937.	-11.	4820.	8.0	30.	600.
328.	90.	182.	13.	89.	352.	1.	8.	1087.	-12.	5050.	8.7	220.	300.
341.	89.	245.	12.	88.	348.	0.	10.	918.	-12.	5000.	8.3	180.	700.
348.	89.	251.	30.	88.	353.	-2.	3.	973.	-12.	4610.	6.5	0.	0.
356.	88.	261.	32.	88.	380.	0.	1.	543.	-8.	2810.	5.2	390.	1200.
357.	88.	259.	33.	85.	369.	0.	0.	580.	-8.	6200.	6.6	260.	300.
353.	87.	263.	39.	87.	369.	1.	5.	980.	-11.	4130.	6.1	0.	0.
249.	87.	249.	49.	85.	382.	1.	13.	1102.	-11.	6660.	8.8	290.	430.
350.	91.	239.	13.	90.	301.	1.	6.	160.	-19.	3360.	8.6	20.	300.

TAS	TH	WDIR	WKTS	GT	GS	RA	VZ	VSEP	DA	SR	TOF	HIT	AZ
329.	90.	270.	29.	90.	358.	0.	0.	784.	-11.	4310.	7.1	0.	0.
340.	87.	267.	27.	87.	369.	0.	3.	815.	-10.	4610.	7.3	0.	0.
331.	89.	267.	32.	89.	359.	0.	2.	793.	-11.	4430.	7.6	0.	0.
338.	91.	257.	26.	91.	355.	0.	0.	766.	-11.	4250.	8.9	0.	0.
330.	92.	256.	34.	90.	361.	0.	3.	113.	-13.	5120.	8.2	0.	0.
328.	92.	256.	22.	88.	348.	0.	3.	119.	-10.	4420.	8.7	90.	600.
326.	88.	269.	27.	87.	349.	0.	3.	105.	-13.	4790.	8.8	40.	1000.
326.	90.	258.	29.	89.	354.	0.	1.	103.	-12.	4780.	8.8	30.	200.
344.	94.	247.	35.	90.	494.	1.	10.	978.	-12.	6710.	8.9	180.	400.
354.	94.	223.	39.	90.	379.	1.	5.	986.	-8.	6250.	9.6	240.	200.
351.	95.	221.	40.	90.	377.	1.	7.	1490.	-14.	6320.	10.2	80.	300.
353.	96.	224.	37.	89.	382.	0.	2.	1411.	-13.	6020.	9.5	150.	300.
359.	90.	224.	28.	91.	374.	0.	3.	1419.	-14.	6840.	9.8	60.	700.
352.	90.	226.	13.	90.	450.	0.	5.	1085.	-19.	5030.	9.2	160.	600.
351.	90.	227.	20.	90.	380.	0.	2.	1109.	-12.	5410.	8.3	20.	900.
335.	87.	267.	30.	89.	336.	0.	1.	907.	-12.	4340.	8.7	20.	300.
343.	84.	335.	29.	92.	325.	0.	3.	962.	-13.	4400.	8.1	10.	1000.
347.	85.	337.	28.	88.	324.	0.	7.	1035.	-14.	4510.	8.5	60.	900.
342.	85.	338.	29.	88.	320.	0.	3.	965.	-13.	4470.	8.9	30.	1000.
337.	86.	339.	27.	89.	309.	2.	15.	1258.	-13.	4860.	8.9	30.	200.
337.	86.	331.	29.	91.	326.	0.	3.	1030.	-14.	4430.	8.8	20.	700.
350.	85.	311.	31.	88.	342.	0.	1.	966.	-13.	4690.	8.3	20.	100.
353.	84.	313.	29.	88.	334.	0.	0.	1036.	-13.	4260.	7.4	0.	1000.
460.	87.	336.	19.	88.	335.	0.	0.	1042.	-13.	4660.	8.8	0.	0.
436.	88.	6.	7.	89.	432.	-3.	4.	853.	-12.	6070.	8.6	80.	1200.
353.	88.	253.	13.	88.	438.	-2.	16.	820.	-12.	4580.	6.6	1360.	1200.
359.	89.	257.	9.	88.	359.	1.	3.	907.	-10.	4000.	6.8	110.	1130.
430.	91.	278.	13.	89.	446.	0.	3.	907.	-9.	4950.	7.9	110.	1300.
356.	90.	254.	17.	90.	432.	0.	2.	821.	-11.	5690.	8.0	40.	230.
377.	88.	257.	13.	89.	367.	2.	15.	1531.	-15.	6540.	10.4	160.	630.
379.	88.	288.	10.	88.	375.	1.	6.	1335.	-15.	5940.	9.9	100.	1100.
366.	87.	280.	16.	88.	389.	0.	1.	1396.	-14.	6240.	9.8	100.	400.
373.	81.	354.	12.	88.	373.	0.	14.	1446.	-15.	5690.	9.9	650.	330.
363.	78.	275.	16.	78.	354.	0.	3.	1913.	-12.	7900.	7.8	20.	1100.
380.	81.	284.	10.	82.	389.	1.	5.	1050.	-12.	5410.	7.8	40.	930.

TAS	TH	WDIR	WKTS	GT	GS	RA	VZ	VSEP	DA	SR	TOF	HIT	AZ
346.	78.	301.	6.	79.	350.	1.	1.	985.	-12.	4710.	8.	20.	430.
339.	74.	248.	5.	77.	344.	1.	0.	929.	-12.	4510.	8.	30.	330.
342.	75.	285.	4.	75.	346.	1.	0.	902.	-12.	4420.	7.	0.	430.
335.	51.	109.	4.	51.	408.	0.	3.	942.	-10.	5260.	8.	140.	500.
410.	89.	20.	9.	90.	351.	0.	0.	1032.	-12.	4760.	8.	100.	600.
355.	89.	357.	6.	90.	339.	0.	12.	1913.	-11.	4570.	8.	60.	530.
41.	89.	44.	6.	90.	343.	0.	3.	1000.	-12.	4650.	8.	0.	0.
353.	88.	354.	9.	90.	346.	-1.	5.	1091.	-13.	4950.	8.	40.	1200.
324.	83.	172.	7.	90.	323.	2.	8.	1152.	-10.	4920.	9.	80.	1500.
426.	91.	190.	4.	83.	412.	0.	15.	1862.	-9.	5000.	7.	120.	300.
403.	87.	257.	3.	91.	426.	0.	2.	9427.	-9.	5560.	8.	180.	500.
418.	91.	225.	28.	87.	406.	0.	4.	8015.	-10.	5620.	7.	220.	630.
420.	92.	244.	29.	90.	445.	1.	15.	9987.	-8.	6050.	8.	100.	100.
456.	85.	254.	29.	87.	379.	0.	3.	851.	-10.	4890.	7.	180.	200.
338.	89.	265.	27.	88.	366.	1.	7.	958.	-11.	4980.	8.	120.	300.
452.	86.	265.	27.	86.	417.	0.	6.	1135.	-10.	6600.	8.	300.	500.
375.	88.	186.	4.	88.	477.	1.	4.	1033.	-10.	710.	8.	160.	1200.
358.	91.	159.	4.	90.	373.	1.	7.	1083.	-11.	7440.	8.	20.	200.
376.	89.	176.	4.	89.	357.	1.	6.	1071.	-12.	6820.	8.	20.	600.
345.	90.	273.	36.	90.	384.	0.	5.	1013.	-11.	5260.	8.	100.	700.
341.	90.	263.	45.	89.	389.	0.	1.	1045.	-11.	5470.	8.	80.	700.
362.	89.	256.	36.	89.	377.	0.	0.	1981.	-12.	5100.	8.	160.	430.
340.	92.	265.	27.	89.	362.	-1.	3.	970.	-10.	4820.	7.	180.	100.
369.	86.	13.	17.	90.	378.	0.	16.	729.	-12.	4180.	6.	260.	1600.
360.	83.	358.	24.	85.	342.	0.	2.	1033.	-13.	4750.	8.	30.	1600.
336.	81.	46.	33.	85.	333.	0.	2.	1050.	-13.	4660.	8.	30.	1530.
326.	91.	246.	5.	91.	331.	0.	1.	8955.	-11.	4350.	4.	380.	730.
321.	90.	256.	26.	89.	332.	0.	6.	8969.	-11.	4810.	3.	220.	630.
360.	74.	240.	23.	87.	378.	0.	3.	7329.	-10.	4010.	8.	240.	630.
404.	90.	312.	27.	89.	409.	-1.	2.	9426.	-18.	6000.	7.	200.	1230.
348.	90.	185.	5.	89.	350.	0.	1.	536.	-11.	3870.	5.	220.	1230.
343.	90.	274.	2.	90.	347.	0.	8.	8999.	-11.	4710.	7.	420.	1530.
343.	90.	241.	4.	88.	346.	0.	2.	718.	-11.	4000.	8.	200.	1200.
412.	92.	205.	38.	87.	424.	2.	2.	1348.	-12.	3990.	10.	390.	100.
457.	91.	253.	37.	90.	491.	0.	3.	1737.	-9.	6410.	8.	100.	100.
339.	93.	254.	38.	91.	376.	0.	4.	1003.	-11.	5070.	7.	100.	160.

TAS	TH	WDIR	WKTS	GT	GS	RA	VZ	VSEP	DA	SR	TOF	HIT	AZ
339.	93.	241.	35.	90.	370.	00.	10.	457.	-8.	3450.	5.4	50.	900.
330.	88.	265.	31.	88.	360.	00.	00.	558.	-9.	3760.	6.0	280.	800.
344.	86.	294.	28.	88.	369.	00.	00.	600.	-9.	3430.	6.2	300.	600.
338.	47.	99.	10.	46.	431.	00.	33.	1036.	-10.	35840.	8.4	80.	400.
349.	89.	116.	5.	89.	339.	-1.	63.	11056.	-13.	4900.	7.6	130.	100.
356.	89.	123.	5.	89.	340.	00.	13.	957.	-12.	4550.	8.7	190.	1230.
342.	90.	155.	3.	90.	349.	00.	13.	1226.	-13.	5670.	9.0	20.	630.
456.	88.	155.	8.	90.	449.	00.	12.	1901.	-8.	5330.	9.8	150.	600.
439.	90.	304.	1.	90.	446.	00.	05.	1193.	-12.	5340.	7.4	370.	600.
459.	89.	304.	1.	90.	443.	00.	33.	868.	-12.	5360.	7.5	160.	100.
337.	50.	39.	1.	80.	329.	00.	05.	862.	-12.	6170.	7.7	60.	500.
333.	79.	74.	2.	89.	331.	00.	33.	908.	-10.	6290.	7.6	50.	600.
333.	90.	240.	8.	88.	469.	00.	00.	846.	-11.	5790.	7.7	0.	330.
463.	88.	274.	1.	88.	381.	00.	06.	7456.	-11.	4740.	7.4	0.	330.
371.	88.	223.	1.	89.	364.	-1.	11.	731.	-12.	4280.	9.9	40.	400.
356.	89.	223.	6.	89.	349.	00.	11.	752.	-12.	4040.	7.2	0.	0.
345.	89.	354.	9.	89.	355.	00.	11.	852.	-12.	4510.	7.7	50.	600.
333.	90.	361.	1.	90.	440.	00.	16.	945.	-9.	5490.	7.0	0.	500.
419.	90.	264.	1.	90.	441.	00.	03.	854.	-9.	5790.	7.5	0.	500.
425.	90.	259.	2.	90.	450.	00.	00.	858.	-8.	5530.	8.4	100.	0.
455.	92.	259.	7.	91.	467.	00.	15.	825.	-8.	5560.	7.6	100.	700.
465.	91.	258.	1.	90.	482.	00.	00.	933.	-9.	5680.	9.9	50.	600.
428.	90.	256.	1.	90.	445.	00.	11.	933.	-9.	5760.	8.0	80.	600.
426.	90.	251.	1.	89.	447.	00.	4.	926.	-9.	5830.	9.0	60.	700.
409.	89.	265.	3.	89.	439.	00.	69.	941.	-13.	4780.	1.1	80.	500.
309.	89.	267.	2.	89.	306.	-1.	8.	979.	-13.	4370.	8.7	170.	530.
313.	87.	129.	1.	89.	331.	00.	5.	1064.	-11.	45530.	7.2	60.	200.
336.	88.	47.	8.	89.	321.	00.	42.	891.	-12.	4220.	5.5	0.	100.
323.	88.	51.	1.	89.	331.	00.	2.	906.	-13.	4080.	7.5	60.	500.
336.	88.	287.	9.	89.	321.	-1.	6.	847.	-12.	4220.	7.5	100.	100.
330.	88.	153.	5.	89.	303.	00.	23.	803.	-13.	4010.	7.5	20.	100.
346.	88.	156.	8.	89.	346.	00.	0.	1048.	-12.	4760.	8.3	400.	500.
396.	88.	307.	1.	90.	391.	00.	46.	1030.	-11.	5090.	8.8	240.	630.

APPENDIX D

This appendix contains the output which compares the experimental data with the FORTRAN version of the ballistics algorithm using the old set of mach, drag, and weapon coefficients. The weapon used for this experiment was the MK-76 MOD-5 25 pound practice bomb.

The coefficients are all assigned in the DECODE subroutine (see Ref. 3 for further explanation of these coefficients). Both sets of coefficients, old and new, are summarized here for the reader's convenience.

Weapon Coefficients

Old Coefficients

IREF = 2
IBOTH = 1
ITYPE = -1
DMAX = 3.0
CFORM1 = 0.0039077
CFORM2 = 0.0
DKG1 = 0.0063648
DKG2 = 0.0
DM1 = 0.0
DM2 = 0.0
VMUZ = 0.0
FN = 0.0
VE = 0.0
SL = 0.0
DS = 0.0

New Coefficients

IREF = 2
IBOTH = 1
ITYPE = -1
DMAX = 6.0
CFORM1 = .1064453
CFORM2 = 0.0
DKG1 = -.0043918
DKG2 = 0.0
DM1 = -.270
DM2 = -.270
VMUZ = 0.0
FN = 0.0
VE = 0.0
SL = 0.0
DS = 0.0

DRAG COEFFICIENTS

Old Coefficients

31 Go to (32,33,34,51), IREF
 32 CC(1,1,1) = 1.572924-03
 CC(1,2,1) = 0.0
 CC(1,3,1) = 0.0
 CC(2,1,1) = 4.678409E-02
 CC(2,2,1) = 0.109711069
 CC(2,3,1) = 6.654801E-02
 CC(3,1,1) = 0.116380157
 CC(3,2,1) = 0.217643894
 CC(3,3,1) = -9.767068E-02
 CT(1,1) = -0.834
 CT(2,1) = 0.977
 If (IBOTH-1) 33,51,33
 33 CC(1,1,IBOTH) = 3.53503924
 CC(1,2,IBOTH) = -3.34778216
 CC(1,3,IBOTH) = 2.87262413
 CC(2,1,IBOTH) = 11.2616503
 CC(2,2,IBOTH) = -27.4162512
 CC(2,3,IBOTH) = 21.7308359
 CC(3,1,IBOTH) = -23.7915472
 CC(3,2,IBOTH) = 44.2607764
 CC(3,3,IBOTH) = -14.4996046
 CT(1,IBOTH) = 0.622
 CT(2,IBOTH) = 0.885
 Go to 51

New Coefficients

311 MSG-1
 Go to (32,33,34,51), IREF
 32 CC(1,1,MSTG) = 1.572924E-3
 CC(1,2,MSTG) = 0.0
 CC(1,3,MSTG) = 0.0
 CC(2,1,MSTG) = 4.67840889E-2
 CC(2,2,MSTG) = -.109711069
 CC(2,3,MSTG) = 6.6548007E-2
 CC(3,1,MSTG) = -.116380157
 CC(3,2,MSTG) = .217643894
 CC(3,3,MSTG) = -9.76706845E-2
 CT(1,MSTG) = .834
 CT(2,MSTG) = .977
 If (IBOTH.EQ.1) go to 51
 33 CC(1,1,MSTG) = .173244
 CC(1,2,MSTG) = 0.
 CC(1,3,MSTG) = 0.
 CC(2,1,MSTG) = .215467
 CC(2,2,MSTG) = .285067
 CC(2,3,MSTG) = .489778
 CC(3,1,MSTG) = -.0039111
 CC(3,2,MSTG) = .5880
 CC(3,3,MSTG) = -.373244
 CT(1,MSTG) = .27
 CT(2,MSTG) = .52
 If (IBOTH.EQ.1) go to 51
 If (IREF.EQ.1) go to 51

Old Coefficients

34 CC(1,1,1) = 0.104115
 CC(1,2,1) = -0.230347
 CC(1,3,1) = 0.167644
 CC(2,1,1) = -0.194037
 CC(2,2,1) = 0.401478
 CC(2,3,1) = -0.164612
 CC(3,1,1) = 7.33246E-02
 CC(3,2,1) = -2.03275E-02
 CC(3,3,1) = 2.44682E-03
 CT(1,1) = 1.032
 CT(2,1) = 1.30

New Coefficients

MSTG=2
 34 CC(1,1,MSTG) = .104115
 CC(1,2,MSTG) = -.230347
 CC(1,3,MSTG) = .167644
 CC(2,1,MSTG) = -.194037
 CC(2,2,MSTG) = .401478
 CC(2,3,MSTG) = -.164612
 CC(3,1,MSTG) = 7.33246E-2
 CC(3,2,MSTG) = -2.03275E-2
 CC(3,3,MSTG) = 2.44682E-3
 CT(1,MSTG) = 1.032
 CT(2,MSTG) = 1.3

DEG	TAS	ALT	ACTUAL DELIVERY A-GEE FREEZE TIME	NPS MODIFIED BOEING ALGORITHM	PER CENT TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
0.	421.	1389.	9.80	6411.	0.65	0.15	0	330.
1.	377.	1413.	9.90	5845.	10.05	0.15	1.68	-5.43
1.	377.	1452.	9.80	5853.	10.84	0.04	1.48	-2.86
1.	376.	1615.	10.60	6193.	10.74	0.14	0.38	-3.99
1.	363.	1388.	9.70	5580.	9.60	0.10	1.05	-6.05
-2.	382.	1276.	9.80	5412.	8.86	0.14	1.04	-6.04
-1.	377.	1797.	9.00	4673.	7.93	0.13	1.05	-5.43
1.	374.	1356.	10.40	5423.	9.16	0.16	1.59	-5.19
1.	374.	1466.	9.00	6065.	17.23	0.17	1.72	-3.33
1.	351.	922.	8.00	5665.	8.37	0.18	1.67	-5.70
1.	398.	970.	8.50	5668.	8.12	0.13	2.34	-7.04
1.	415.	407.	5.30	3607.	5.58	0.18	3.60	-9.80
2.	362.	501.	5.70	3494.	6.68	0.12	3.61	-8.66
2.	340.	610.	6.80	3741.	6.93	0.13	3.82	-4.60
1.	359.	500.	5.60	3333.	6.01	0.17	1.82	0.87
0.	351.	516.	5.70	3350.	5.77	0.15	1.77	-3.95
0.	340.	1793.	8.20	4336.	8.35	0.12	1.47	-6.87
0.	331.	961.	7.80	4509.	7.92	0.03	1.47	-6.87
0.	335.	1118.	8.60	5007.	8.57	0.06	1.36	-6.25
0.	384.	1975.	8.00	5372.	8.01	0.01	1.37	-6.55
0.	342.	1057.	8.40	5102.	8.34	0.06	1.43	-2.53
1.	924.	924.	8.80	4591.	7.91	0.11	1.80	-4.96
0.	401.	1042.	8.50	4731.	8.06	0.19	2.73	-6.05
0.	401.	1100.	8.60	5746.	8.31	0.06	2.73	-6.05
1.	370.	1056.	8.40	5469.	8.36	0.04	2.73	-6.05
1.	370.	514.	6.20	3584.	6.08	0.08	2.18	-7.00
1.	328.	911.	7.70	4059.	7.71	0.01	1.11	-5.79
1.	326.	829.	7.50	3812.	7.62	0.12	1.22	-3.60
0.	331.	891.	7.60	4065.	7.79	0.11	1.47	-6.17
0.	351.	817.	7.20	3930.	7.62	0.20	1.36	-4.15
-1.	351.	684.	6.20	3829.	7.30	0.10	1.93	-7.13
0.	436.	779.	6.90	5253.	6.57	0.13	0.52	-4.80
0.	427.	747.	7.00	4194.	6.95	0.05	0.68	-4.77
0.	427.	908.	7.90	4139.	7.74	0.16	0.77	-7.00
0.	381.	917.	7.90	5251.	7.76	0.14	0.77	-7.00

MK-76 MOD-5 WITH OLD COEFFICIENTS

DEG	TAS	ALT	ACTUAL DELIVERY A-6E FREEZE DATA TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	DIFFERENCES DIST	PER CENT TIME	PER CENT ERROR
1.	393.	909.	8.00	8.10	0.10	245.	1.18	-4.75
0.	353.	1990.	8.50	8.06	0.06	-229.	1.06	-4.38
0.	348.	990.	8.00	8.38	0.08	-219.	1.02	-4.11
1.	349.	959.	8.20	8.25	0.05	-191.	2.05	-2.31
2.	342.	962.	8.60	8.58	-0.02	-227.	1.59	-4.13
0.	354.	879.	7.60	7.72	0.02	-316.	2.25	-7.16
0.	355.	912.	7.20	7.05	-0.02	-185.	0.33	-4.45
0.	340.	988.	7.80	8.09	0.09	-311.	1.34	-7.08
1.	348.	927.	7.80	7.78	-0.02	-163.	1.34	-3.93
0.	345.	934.	7.10	7.45	0.05	-197.	2.07	-6.01
0.	412.	1023.	8.20	8.23	0.03	-132.	0.33	-3.22
0.	322.	1096.	8.60	8.04	-0.04	174.	0.29	-3.55
0.	322.	990.	8.00	8.07	0.07	-264.	1.52	-5.56
0.	324.	996.	8.30	8.47	0.07	-235.	0.85	-2.66
1.	335.	1013.	8.80	8.45	-0.04	-771.	1.65	-3.16
0.	336.	967.	8.00	8.79	0.07	-142.	0.17	-2.92
0.	335.	926.	8.30	8.90	0.06	-117.	0.13	-2.30
0.	333.	989.	8.20	8.32	0.02	-221.	0.33	-5.15
0.	324.	1002.	8.00	8.09	0.09	-228.	1.08	-5.66
0.	324.	961.	8.00	8.95	0.05	-246.	0.68	-5.00
1.	418.	1045.	8.50	8.57	0.07	-250.	0.84	-7.89
1.	403.	1126.	8.30	8.46	0.07	-275.	0.84	-7.94
0.	371.	1109.	8.70	8.38	-0.03	-299.	1.39	-5.45
0.	368.	1128.	8.20	8.11	-0.01	-279.	1.14	-3.25
0.	422.	1106.	8.40	8.38	-0.02	-154.	1.20	-6.78
0.	422.	1057.	8.00	8.05	0.05	-283.	1.80	-3.89
0.	422.	1004.	8.10	8.55	0.05	-299.	1.00	-6.72
0.	422.	983.	8.00	8.01	0.01	-219.	1.20	-4.73
0.	422.	964.	8.00	8.33	0.03	-312.	0.85	-4.82
0.	422.	930.	8.60	8.23	-0.04	-193.	2.33	-6.63
0.	408.	1021.	8.20	8.11	-0.01	-250.	1.00	-5.94
0.	311.	1003.	7.80	8.09	0.09	-278.	0.00	-6.71
0.	311.	937.	7.80	7.81	0.01	-253.	0.00	-6.14
0.	311.	944.	7.80	7.84	0.04	-253.	0.00	-6.14

MK-76 MOD-5 WITH OLD COEFFICIENTS

DEG	TAS	ALT	ACTUAL DELIVERY A-6E FREEZE TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
00.	330.	926.	7.70	7.77	0.07	0.96	-5.62
00.	324.	938.	7.50	7.82	0.12	1.57	-4.93
00.	312.	1142.	8.50	7.65	0.15	1.73	-3.64
00.	304.	1014.	8.10	8.13	0.03	0.40	-4.55
00.	261.	956.	7.80	7.87	0.07	0.88	-6.74
10.	312.	1068.	8.50	8.65	0.15	1.21	-4.56
00.	326.	1003.	8.00	8.10	0.10	1.21	-4.86
00.	424.	921.	8.00	8.05	0.05	0.59	-6.23
00.	345.	642.	8.60	7.45	-0.15	-2.59	-9.00
00.	360.	542.	5.70	5.59	-0.11	-1.33	-9.85
-10.	334.	499.	6.50	5.66	-0.06	-0.90	-5.46
10.	337.	590.	6.50	6.48	-0.02	-0.33	-6.29
10.	446.	931.	7.90	7.84	-0.04	-0.45	-6.84
-10.	373.	1014.	7.50	7.85	0.12	1.70	-5.28
-10.	342.	719.	7.10	6.98	-0.12	-1.02	-6.32
-10.	344.	750.	7.00	6.93	-0.07	-0.28	-7.41
-10.	333.	804.	7.80	6.06	-0.26	-3.04	-8.91
10.	358.	557.	6.30	6.33	0.03	0.46	-6.70
00.	367.	584.	6.10	6.15	0.05	0.76	-5.91
00.	379.	411.	5.00	5.13	0.10	1.18	-3.47
00.	410.	992.	8.00	8.14	0.06	0.64	-6.87
10.	366.	1188.	9.20	7.63	-0.07	-0.98	-6.18
00.	361.	928.	7.70	7.80	0.10	1.44	-6.40
10.	354.	864.	7.70	7.85	0.15	1.86	-4.81
00.	346.	930.	7.80	7.80	0.00	0.01	-4.68
00.	353.	1149.	8.00	8.70	0.70	8.66	-8.00
-10.	336.	1980.	7.80	7.67	-0.13	-0.66	-6.39
-10.	351.	1030.	8.00	7.91	-0.09	-0.65	-6.15
-10.	359.	1097.	8.10	8.18	0.08	1.15	-4.64
-10.	348.	838.	7.30	7.39	0.19	2.61	-6.11
-10.	357.	927.	6.70	7.67	0.97	9.88	-7.50
-10.	339.	748.	6.50	6.42	-0.08	-0.61	-5.78
-10.	352.	1067.	6.50	6.44	-0.06	-0.97	-5.03
10.	381.	702.	6.70	7.46	0.76	8.20	-2.67
00.	344.	723.	5.60	6.55	0.95	9.23	-2.65
00.	344.	486.	5.60	5.59	-0.01	-0.23	-1.95

MK-76 MOD-5 WITH OLD COEFFICIENTS

DEG	TAS	ALT	ACTUAL DELIVERY A-6E FREEZE DIST	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	DIFFERENCES DIST	PER CENT TIME	PER CENT ERROR DIST
0.	361.	641.	3796.	5568.	0.05	-229.	0.71	-6.40
1.	344.	961.	4519.	4320.	-0.05	-199.	-0.61	-4.78
1.	365.	903.	4592.	4383.	0.13	-210.	-0.61	-4.78
1.	362.	956.	4694.	4482.	0.08	-212.	0.66	-3.99
0.	379.	933.	4831.	4645.	0.08	-186.	0.90	-7.08
0.	348.	863.	4242.	3968.	-0.07	-281.	-1.32	-8.36
0.	354.	884.	4504.	4169.	0.10	-334.	-1.02	-10.33
-1.	343.	882.	4453.	4109.	-0.08	-397.	-1.03	-5.52
0.	344.	884.	4237.	3841.	0.03	-241.	0.34	-4.79
1.	343.	888.	4412.	4170.	0.13	-185.	0.69	-4.54
0.	352.	937.	4291.	4104.	0.03	-207.	0.41	-7.68
0.	367.	943.	4651.	4324.	0.17	-332.	-1.71	-24.51
0.	329.	1197.	6613.	6228.	-0.07	-129.	-0.91	-3.18
0.	362.	1181.	6585.	6289.	0.07	-172.	-0.85	-3.57
1.	355.	980.	4683.	4496.	0.15	-166.	0.25	-4.67
1.	355.	1056.	4901.	4626.	0.07	-175.	0.47	-4.25
1.	354.	901.	5030.	4728.	-0.04	-213.	-0.50	-15.77
1.	353.	695.	5040.	4818.	0.20	-182.	-0.77	-6.21
1.	351.	464.	4308.	3857.	-0.04	-193.	-0.77	-9.12
0.	352.	392.	3345.	3114.	0.09	-207.	-0.82	-7.24
0.	361.	367.	3314.	3288.	0.16	-266.	-0.14	-9.74
0.	343.	363.	3375.	3058.	-0.01	-317.	-0.42	-9.37
0.	353.	500.	3590.	3221.	0.03	-178.	-0.19	-4.37
0.	342.	913.	4239.	4152.	0.00	-173.	0.15	-5.50
1.	329.	936.	4206.	4075.	0.12	-231.	-0.50	-5.80
1.	329.	943.	4314.	4125.	0.05	-192.	-0.66	-4.95
1.	331.	961.	4512.	4385.	0.13	-216.	-0.56	-6.69
0.	337.	889.	4766.	4525.	0.00	-159.	0.03	-3.23
0.	363.	1001.	5151.	4892.	-0.08	-229.	-0.38	-6.81
1.	367.	1064.	4766.	4519.	0.11	-256.	-0.26	-4.89
1.	360.	1072.	5407.	5151.	-0.01	-251.	-0.07	-5.57
1.	360.	1174.	6003.	5798.	0.13	-134.	-1.16	-2.53
1.	360.	1169.	5932.	5798.	0.18	-134.	-1.16	-2.53

MK-76 MOD-5 WITH OLD COEFFICIENTS

DEG	TAS	ALT	ACTUAL DELIVERY A-6E FREEZE TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR
1.	356.	1761.	11.10	5787.	08	74	00
1.	367.	1713.	10.90	5886.	05	33	63
1.	365.	1712.	10.70	5710.	00	04	73
1.	323.	1908.	7.90	4247.	00	16	25
1.	353.	904.	7.10	4314.	00	13	32
0.	351.	521.	6.50	4664.	00	26	86
0.	338.	479.	5.70	3095.	00	15	48
0.	329.	435.	5.50	2268.	00	22	48
0.	328.	391.	5.20	2686.	00	47	98
0.	330.	379.	4.90	2623.	00	10	49
0.	350.	337.	4.30	2359.	00	08	06
0.	343.	315.	4.60	2550.	00	03	53
0.	329.	322.	4.50	2412.	00	03	20
1.	338.	462.	5.70	3554.	00	16	27
1.	422.	864.	7.70	5219.	00	15	69
0.	361.	907.	7.50	4849.	00	19	29
0.	364.	1050.	8.10	5727.	00	11	43
1.	394.	1276.	9.00	5422.	00	44	20
1.	356.	612.	8.30	5538.	00	10	38
1.	343.	792.	8.00	5084.	00	51	57
0.	342.	892.	7.60	3942.	00	03	55
0.	403.	631.	6.00	4261.	00	06	61
0.	462.	661.	6.10	6372.	00	37	17
0.	473.	641.	6.30	5491.	00	10	83
0.	435.	1161.	10.10	6591.	00	14	17
0.	458.	1175.	10.30	6591.	00	11	55
0.	422.	1111.	9.60	5172.	00	22	30
0.	453.	469.	9.50	3328.	00	14	02
1.	421.	515.	5.70	3503.	00	05	12
1.	432.	492.	5.80	3747.	00	17	43
1.	435.	1506.	10.20	4656.	00	43	25
0.	441.	1138.	9.50	4922.	00	03	18
0.	424.	1139.	9.60	4722.	00	09	53
0.	426.	1197.	9.50	4459.	00	09	00
0.	435.	997.	8.00	4459.	00	10	08

MK-76 MOD-5 WITH OLD COEFFICIENTS

DEG	TAS	ALT	ACTUAL DELIVERY A-6E FREEZE DATA TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR	DIST
-1.	353.	1017.	7.90	7.85	0.05	-0.58	-6.37	37
-1.	340.	999.	7.90	7.78	0.12	-1.48	-7.93	38
0.	356.	999.	8.00	7.10	0.90	-1.03	-4.38	16
0.	423.	1334.	9.50	8.45	0.05	-0.23	-5.17	17
0.	423.	1524.	10.30	9.12	0.18	-0.75	-3.91	18
0.	352.	1174.	8.70	8.80	0.10	0.41	-4.02	19
2.	334.	1139.	10.10	9.22	0.88	-0.98	-8.86	20
0.	334.	1206.	9.10	8.01	1.09	-0.98	-4.49	21
1.	339.	1151.	8.30	8.22	0.08	-0.09	-6.23	22
0.	407.	1022.	8.00	8.01	0.01	0.01	-5.26	23
0.	336.	981.	7.30	7.41	0.11	-0.44	-7.27	24
0.	337.	882.	4.50	7.59	0.08	1.19	-2.07	25
-5.	334.	544.	6.00	4.58	0.15	-2.22	-1.92	26
-1.	339.	587.	6.10	5.25	0.85	-1.74	-5.46	27
0.	344.	602.	5.00	6.20	0.14	-2.20	-3.70	28
0.	330.	564.	6.20	6.25	0.05	-0.08	-7.06	29
0.	335.	605.	5.80	5.77	0.03	0.01	-3.33	30
0.	340.	553.	7.00	7.11	0.11	-0.16	-5.68	31
0.	428.	767.	7.50	7.51	0.01	0.01	-3.16	32
0.	331.	919.	7.70	7.74	0.04	-0.04	-5.08	33
0.	334.	923.	8.00	7.76	0.24	-0.30	-4.69	34
0.	355.	951.	8.80	7.89	0.91	-1.15	-7.40	35
0.	358.	1142.	9.10	8.64	0.46	-0.51	-4.13	36
-1.	380.	1966.	8.00	7.64	0.36	-0.44	-4.14	37
0.	369.	1000.	8.10	8.11	0.01	-0.01	-5.72	38
0.	352.	955.	8.00	7.92	0.08	-0.08	-6.70	39
1.	352.	1159.	8.90	7.97	0.93	-1.16	-7.06	40
0.	356.	994.	8.20	8.20	0.00	0.00	-1.50	41
0.	340.	1027.	8.60	8.40	0.20	-0.23	-3.90	42
1.	455.	947.	7.30	8.20	0.90	-1.10	-4.31	43
-1.	353.	827.	7.80	6.99	0.81	-1.01	-4.93	44
0.	355.	1022.	8.20	7.88	0.32	-0.39	-7.25	45
-1.	351.	820.	7.90	7.19	0.71	-0.90	-5.58	46
-1.	361.	926.	7.90	7.47	0.43	-0.54	-5.87	47

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F/G 9/2

VERIFICATION AND FEASIBILITY STUDY OF A MICRO-COMPUTER BASED BA--ETC(U)

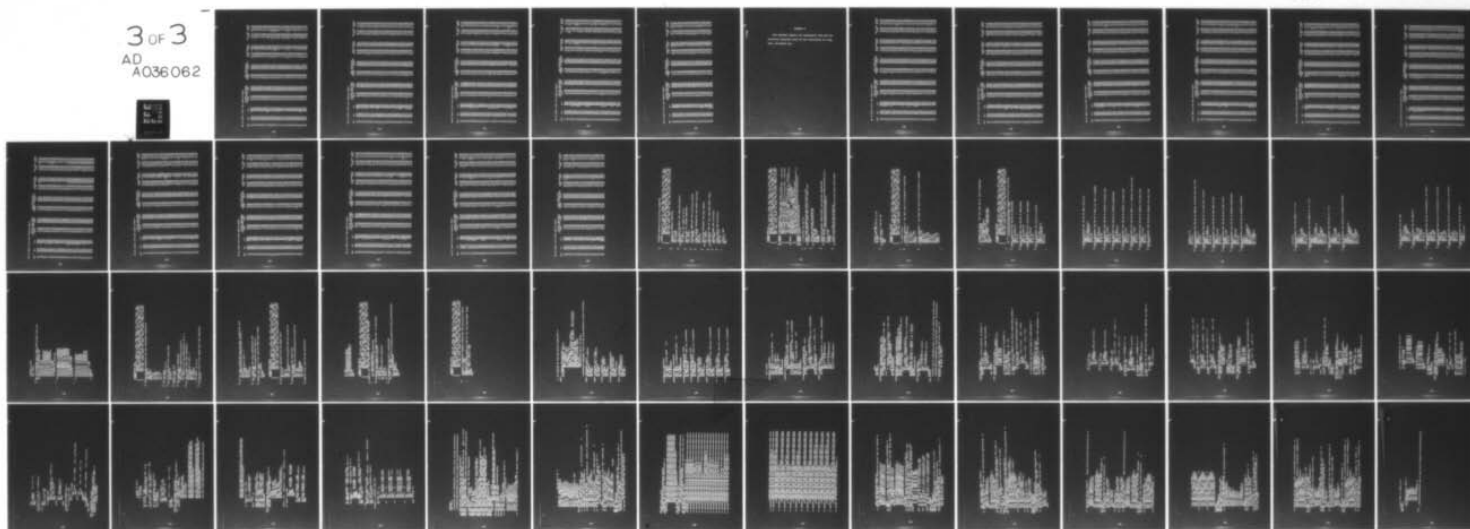
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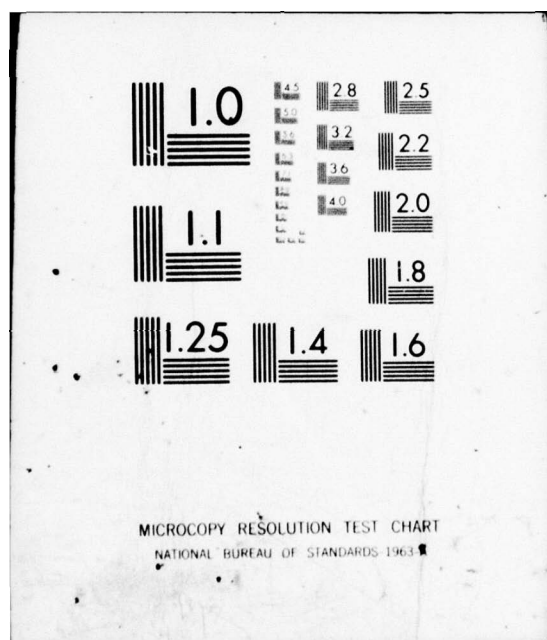
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HK-76 MOD-5 WITH OLD COEFFICIENTS

DEG	TAS	ALT	ACTUAL DELIVERY A-6E FREEZE DATA	NPS MODIFIED BOEING ALGORITHM	DIFFERENCES TIME DIST	PER CENT TIME ERROR	PER CENT TIME ERROR
-1.	342.	1022.	6409.	4101.	-0.12	-56.28	3
-2.	438.	814.	5078.	5043.	-0.24	-9.70	14
1.	321.	749.	4120.	3715.	-0.07	-6.88	29
0.	311.	704.	3970.	3396.	0.05	-6.84	5
1.	311.	653.	3622.	3473.	0.09	-5.62	4
0.	333.	905.	4728.	4295.	0.09	-4.25	3
0.	333.	863.	4478.	4481.	0.10	-4.25	3
1.	333.	921.	4701.	4498.	0.08	-4.25	3
1.	333.	918.	4627.	4466.	0.08	-4.25	3
1.	333.	933.	4880.	4594.	0.14	-3.20	0
1.	333.	1087.	4518.	4261.	0.05	-3.20	0
0.	333.	918.	4395.	4261.	0.44	-6.01	2
0.	333.	543.	3959.	3572.	-0.70	-22.81	1
-2.	333.	543.	2757.	3572.	0.02	-22.81	1
0.	333.	627.	6590.	3729.	-0.18	-6.92	6
0.	333.	543.	6012.	3729.	0.02	-6.92	6
1.	333.	980.	6568.	3729.	0.02	-6.92	6
1.	333.	1104.	6305.	3729.	0.10	-19.05	3
1.	333.	798.	3920.	3914.	0.54	-6.14	6
1.	333.	776.	3698.	3914.	0.17	-9.13	5
1.	333.	776.	4067.	3914.	0.29	-4.35	3
0.	333.	742.	3307.	3783.	-0.44	-13.88	8
1.	333.	766.	4507.	3906.	-0.61	-15.88	7
2.	333.	780.	5646.	3906.	-0.30	-8.77	5
0.	333.	794.	3829.	3947.	0.27	-2.35	5
0.	333.	812.	4428.	3947.	0.21	-6.31	7
0.	333.	804.	3829.	4151.	-0.15	-3.55	5
0.	333.	820.	4428.	4151.	0.15	-1.33	3
-1.	333.	891.	5246.	4095.	0.00	-6.06	9
-1.	333.	606.	4767.	4472.	-0.05	-7.57	7
0.	333.	1094.	3701.	4462.	-0.25	-7.22	7
0.	333.	965.	6357.	4462.	-0.07	-7.22	7
0.	333.	965.	5120.	4462.	-0.07	-7.22	7
0.	333.	921.	4426.	4462.	-0.07	-7.22	7

MK-76 MOD-5 WITH OLD COEFFICIENTS

DEG	TAS	ALT	ACTUAL DELIVERY A-6E FREEZE DATA TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	DIFFERENCES DIST	PER CENT TIME	PER CENT ERROR
0.	331.	1065.	4454.	8.35	-0.05	236.	-0.54	5.60
1.	330.	1059.	4579.	8.64	0.08	-183.	0.02	-4.16
0.	340.	976.	4178.	8.98	0.08	-244.	0.02	-6.19
0.	340.	972.	4660.	7.98	0.08	-771.	0.95	-19.82
1.	355.	1178.	5557.	9.14	0.14	-198.	1.57	-3.69
0.	347.	938.	4360.	7.97	0.04	-164.	0.37	-4.55
0.	344.	970.	4456.	7.97	0.03	-194.	0.45	-3.59
1.	345.	1020.	4619.	8.50	0.10	-160.	1.25	-8.29
0.	317.	671.	3567.	6.58	0.12	-277.	0.69	-7.68
0.	321.	867.	3833.	7.51	0.11	-227.	0.49	-5.05
0.	320.	899.	4257.	7.65	0.05	-209.	0.67	-4.77
1.	322.	877.	4363.	7.74	0.06	-772.	0.83	-21.00
0.	327.	918.	4446.	7.78	0.02	-265.	0.31	-6.30
0.	303.	881.	4431.	7.58	0.19	-180.	0.45	-4.25
1.	320.	1026.	4464.	6.79	0.10	-309.	0.57	-9.15
1.	320.	779.	4412.	6.50	0.04	-214.	0.71	-6.58
1.	309.	768.	3681.	5.64	0.03	-155.	0.92	-4.21
1.	321.	548.	2940.	6.21	0.03	-190.	0.33	-7.16
0.	327.	738.	3813.	6.73	0.06	-220.	0.81	-5.45
0.	330.	864.	4488.	7.06	0.04	-218.	0.51	-5.15
0.	329.	804.	4238.	7.14	0.04	-309.	0.22	-7.54
0.	330.	915.	4537.	7.28	0.02	-306.	0.19	-4.77
0.	331.	793.	4358.	7.10	0.05	-191.	0.54	-5.39
0.	328.	1166.	4180.	8.55	0.02	-253.	0.24	-6.39
0.	323.	1193.	4348.	7.18	0.02	-259.	0.34	-5.49
0.	323.	1055.	4672.	8.33	0.02	-165.	0.47	-3.90
0.	322.	1035.	4759.	8.29	0.03	-244.	0.54	-5.48
0.	326.	978.	4677.	8.77	0.09	-155.	0.40	-4.38
0.	326.	986.	6637.	8.95	0.05	-164.	0.20	-4.08
1.	344.	1490.	6184.	10.28	0.08	-248.	0.36	-4.09
1.	351.	1260.	5538.	9.95	0.15	-263.	0.27	-5.15
0.	353.	1411.	5552.	9.80	0.18	-377.	0.36	-4.09
0.	353.	1419.	5922.	9.70	0.10	-239.	0.89	-17.09
0.	345.	1985.	6769.	8.09	0.11	-778.	1.13	-12.99

NK-76 MOD-5 WITH OLD COEFFICIENTS

DEG	TAS	ALT	ACTUAL DELIVERY A-6E FREEZE TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR
00	332	1049	4919	8:29	0:01	-0:11	-10:55
00	335	1107	5295	8:54	0:04	-0:50	-5:47
00	338	962	4244	8:70	0:13	0:07	-6:40
00	345	987	4088	7:93	0:06	1:67	-6:91
00	347	1035	4288	8:04	-0:26	-0:16	-7:59
20	343	1258	4390	8:25	-0:05	-0:21	-8:54
00	342	1030	4365	8:71	0:12	0:44	-2:01
00	343	1064	4694	8:22	0:06	1:75	-7:09
00	359	1036	4309	8:94	-0:05	-0:58	-6:19
00	350	1011	4180	8:72	0:13	0:22	-5:51
00	353	1042	4574	8:27	-0:18	-1:20	-7:76
20	400	853	4593	8:02	0:08	-1:30	-6:05
00	400	820	4500	8:32	-0:16	-2:22	-5:16
00	403	827	4395	8:41	0:10	-1:50	-6:31
00	406	907	4849	7:82	-0:18	-2:20	-5:20
00	406	927	4617	7:34	0:14	-1:30	-3:57
20	406	821	4363	7:32	0:19	-1:10	-5:23
00	406	1537	5399	10:91	0:01	0:12	-3:59
00	406	1375	5779	9:99	-0:09	-0:19	-5:34
00	406	1127	5082	9:19	-0:10	-0:08	-6:22
00	406	1446	5524	9:81	-0:03	-0:03	-6:47
00	406	1050	5307	9:63	0:05	0:05	-6:21
00	406	985	4606	8:35	0:09	0:16	-5:35
00	406	922	4413	8:11	-0:07	-0:07	-5:18
00	406	846	4326	8:93	0:12	-0:16	-5:49
00	406	942	5175	8:23	-0:13	-1:51	-4:19
00	406	1013	4678	8:09	0:40	-1:62	-5:18
00	406	1091	4541	8:09	-0:11	-1:31	-5:16
00	406	1152	4828	8:16	-0:50	-1:06	-5:39
00	406	1862	4925	8:33	-0:10	-1:23	-6:51
00	406	942	5480	7:59	-0:21	-2:36	-5:51
00	406	807	4813	7:27	-0:23	-2:36	-5:51

DEG	TAS	ALT	ACTUAL DELIVERY A-6E FREEZE DATA TIME	NPS BOEING MODIFIED ALGORITHM TIME	DIST	DIFFERENCES TIME	DIST	PER CENT TIME	ERROR DIST
1	180	815	5561	71	5301	09	260	1	90
10	420	857	5967	78	5771	00	296	-4	48
11	456	859	5176	75	55230	00	1705	-12	78
10	335	598	4887	68	4673	01	147	-2	48
11	357	1135	6502	88	6283	00	210	-4	47
11	425	1031	5616	80	6456	00	143	-3	41
11	352	833	7393	77	4733	00	2935	-5	923
10	376	1071	6644	80	4843	00	189	-4	31
10	345	1013	5162	88	4868	00	221	-3	93
00	377	1045	5369	88	5023	00	287	-4	37
00	410	981	5005	80	4514	00	189	-3	96
00	344	729	4721	75	3907	00	209	-5	98
1	362	1050	4116	66	4334	00	303	-4	54
00	340	723	4638	88	4138	00	320	-6	73
00	366	1050	4547	88	4211	00	330	-7	97
00	328	835	4269	77	3819	00	336	-1	79
1	321	836	3941	73	3690	00	430	-1	79
00	366	739	3926	76	3597	00	328	-8	59
00	347	942	3526	53	3563	00	370	-2	58
00	408	530	3831	75	3593	00	337	-5	96
00	343	999	4603	83	3935	00	220	-3	92
2	429	718	3935	68	3715	00	275	-4	38
00	453	1052	3919	10	4624	00	295	-2	39
00	477	1173	6170	87	4621	00	1571	-7	81
00	439	1003	4970	10	7738	00	231	-7	41
00	439	458	3420	51	3738	00	269	-6	21
00	440	550	3377	55	3639	00	351	-7	41
00	420	600	3377	62	3522	00	321	-7	21
00	460	1036	4773	88	4417	00	309	-9	44
00	470	956	4448	75	4177	00	326	-6	70
00	400	956	4518	79	4861	00	346	-9	44
1	469	1226	5187	91	4861	00	346	-6	70
1	459	1901	5598	93	5206	01	1001	-6	12
1	443	1193	55205	33	6206	93	1001	-6	12

MK-76 MOD-5 WITH OLD COEFFICIENTS

DEG	TAS	ALT	ACTUAL DELIVERY A-6E FREEZE TIME	DELIVERY DATA DIST	NPS BOEING ALGORITHM TIME	MODIFIED DIST	DIFFERENCES TIME	DISTANCES DIST	PER CENT TIME	ERROR DIST
0	347	868	7:50	6300	7:53	4018	0:03	-283	37	-56:82
0	342	867	7:60	4079	7:57	3895	-0:00	-209	17	-57:41
0	333	890	7:70	6225	7:67	3597	0:03	-226	17	-57:06
0	463	898	7:60	5720	7:72	5448	0:12	-223	23	-54:57
0	371	846	7:40	4664	7:44	4418	0:04	-247	17	-55:44
0	356	756	7:00	4213	7:01	3996	0:01	-217	12	-50:08
1	347	731	7:90	3973	7:58	3692	0:32	-368	82	-19:47
1	343	718	7:20	4260	7:15	4022	0:05	-368	77	-19:57
1	339	845	7:20	4429	7:16	4242	0:56	-387	13	-11:56
0	421	954	7:70	5408	7:90	5328	0:20	-83	76	-6:10
0	425	954	8:00	5711	7:94	5330	0:06	-323	24	-4:45
0	425	825	7:50	5463	7:52	5276	0:02	-263	25	-4:59
0	425	978	7:40	5539	7:38	6161	0:10	-266	11	-4:58
1	428	933	7:90	5603	7:55	5350	0:05	-246	14	-7:23
0	425	931	7:90	5684	7:84	5361	0:06	-389	25	-7:20
0	426	926	8:00	5756	7:82	5369	0:18	-333	49	-8:06
0	419	945	8:10	5702	7:90	5383	0:20	-313	19	-6:22
1	409	941	8:70	4196	7:12	4010	0:00	-138	11	-34:31
1	323	979	8:20	4259	7:17	4040	0:15	-138	33	-33:78
0	323	1064	8:20	4125	7:35	3975	0:12	-150	22	-8:20
0	326	891	7:50	3991	7:62	3689	0:08	-373	49	-17:09
1	323	906	7:50	4122	7:42	3849	-0:01	-209	37	-15:49
0	323	880	7:50	4015	7:37	3806	0:17	-258	37	-17:06
0	305	3903	7:50	3907	7:66	3641	0:16	-302	06	-6:35
0	365	1048	8:30	4642	8:23	4553	0:07	-289	21	-6:21
0	365	1030	8:40	4843	8:28	4584	0:17	-104	21	-6:21
0	396	1014	8:40	4988	8:18	4884	0:18	-104	21	-6:21

APPENDIX E

This appendix compares the experimental data with the ballistics algorithm using the new coefficients for drag, mach, and weapon type.

MK-76 MOD-5 WITH NEW COEFFICIENTS

DEG	TAS	ALT	ACTUAL DELIVERY A-6E FREEZE DATA TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR
0.	421.	1389.	6411.	6083.	-328.	-2.86	-5.40
1.	377.	1413.	5842.	5694.	-177.	-0.44	-2.58
1.	376.	1452.	5853.	5640.	-212.	-0.29	-3.76
1.	376.	1615.	6190.	6036.	-157.	-0.29	-3.61
-1.	363.	1388.	5580.	5271.	-309.	-2.81	-5.50
-1.	374.	1276.	5412.	5081.	-330.	-2.81	-5.50
-1.	377.	1356.	5473.	5225.	-258.	-0.15	-3.79
1.	374.	1466.	5465.	5277.	-198.	-0.15	-3.79
1.	351.	920.	5665.	5293.	-289.	-2.76	-5.00
1.	358.	407.	5668.	5296.	-374.	-3.02	-7.07
0.	362.	501.	5694.	5316.	-311.	-2.79	-12.87
0.	340.	610.	3741.	3354.	-332.	-2.64	-10.49
2.	359.	516.	3330.	3144.	-192.	-0.80	-5.42
1.	352.	500.	3335.	3149.	-206.	-0.80	-5.56
0.	340.	516.	3336.	3150.	-204.	-0.80	-5.36
0.	335.	1051.	4509.	4038.	-300.	-1.34	-4.74
0.	331.	961.	4507.	4035.	-277.	-1.34	-4.74
0.	335.	1118.	5007.	4521.	-297.	-1.34	-4.74
0.	335.	1057.	5372.	4826.	-351.	-1.28	-5.30
0.	335.	1057.	5102.	4521.	-277.	-1.28	-5.30
1.	323.	924.	4751.	4467.	-211.	-0.47	-2.81
1.	323.	1042.	4751.	4467.	-211.	-0.47	-2.81
0.	405.	1100.	5746.	5455.	-290.	-1.11	-5.32
0.	401.	1056.	5469.	5106.	-363.	-1.09	-5.74
1.	370.	944.	4563.	4233.	-330.	-1.19	-5.33
1.	370.	911.	4563.	4233.	-330.	-1.19	-5.33
1.	328.	824.	3812.	3660.	-233.	-1.27	-6.15
0.	326.	929.	4063.	3802.	-261.	-1.09	-4.91
0.	331.	891.	3930.	3752.	-177.	-1.09	-4.55
-1.	354.	817.	4171.	3937.	-234.	-1.59	-7.23
-1.	359.	684.	5253.	4874.	-379.	-3.91	-10.46
0.	336.	777.	4134.	3972.	-162.	-2.08	-4.54
0.	327.	744.	4179.	3972.	-207.	-2.08	-5.74
0.	387.	908.	5779.	5356.	-423.	-3.69	-7.90
0.	387.	917.	5251.	4884.	-366.	-3.69	-7.90

MK-76 MOD-5 WITH NEW COEFFICIENTS

DEG	TAS	ALT	ACTUAL DELIVERY A-6 FREEZE TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	DIFFERENCES DIST	PER CENT TIME	PER CENT ERROR
10	393	909	8:00	7:98	0:02	265	0:20	5:16
00	353	1124	8:50	8:50	0:00	225	0:00	4:44
00	348	990	8:00	7:95	0:05	229	0:00	5:37
10	349	959	8:20	8:27	0:05	199	0:00	2:85
20	342	962	8:60	8:15	0:12	231	0:07	4:51
00	357	912	8:70	8:48	0:13	236	1:06	8:13
00	354	988	7:70	7:62	0:08	201	1:09	7:85
00	359	880	7:80	7:95	0:25	324	3:02	4:20
10	349	927	7:80	7:80	0:00	176	0:01	4:27
00	348	934	7:80	7:68	0:12	270	0:54	5:27
10	354	851	7:10	7:04	0:06	152	0:05	3:77
00	412	1023	7:30	7:35	0:05	221	0:05	3:98
00	322	1096	8:60	8:38	0:22	266	2:02	5:74
00	325	996	8:00	7:93	0:03	243	0:03	5:74
00	322	1013	8:30	8:34	0:04	177	0:03	2:87
10	332	967	8:00	7:57	0:15	145	0:39	3:23
00	356	926	8:80	8:68	0:12	101	1:58	5:15
10	325	989	8:30	8:20	0:20	238	2:02	3:38
00	323	1002	8:20	8:00	0:15	257	2:29	5:32
00	324	961	8:00	7:85	0:05	258	1:03	5:18
10	341	1045	8:50	8:47	0:03	151	0:51	9:03
10	408	1109	8:30	8:17	0:17	249	2:05	8:05
00	371	1128	8:70	8:62	0:08	166	1:08	3:07
00	369	1106	8:20	8:27	0:07	164	0:09	5:40
10	420	1057	8:40	8:13	0:03	243	0:03	7:04
00	322	1004	8:30	7:93	0:18	306	2:33	7:19
00	321	1056	8:30	7:85	0:18	220	2:09	7:82
00	318	964	7:60	7:49	0:10	209	1:58	7:55
00	318	930	8:20	7:69	0:13	298	1:58	6:06
00	311	1003	8:80	8:07	0:08	255	1:06	6:57
00	311	934	7:80	7:75	0:05	261	0:05	6:33

MK-76 MOD-5 WITH NEW COEFFICIENTS

DEG	TAS	ALT	ACTUAL DELIVERY A-6E FREEZE TIME	DATA DIST	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	ERROR DIST
00	330	926	7:70	4526	7:67	0:03	0	91
00	332	938	7:70	4462	7:73	0:03	-5	18
00	324	1014	7:50	4652	7:56	0:06	-5	66
00	304	1014	8:10	4395	8:04	-0:06	-4	57
00	261	956	7:80	3812	7:79	-0:01	-0	72
10	312	1063	7:50	4700	8:00	0:05	-4	72
00	325	1003	8:00	4635	8:05	0:05	-5	04
00	424	521	8:00	5422	7:68	-0:32	-6	94
00	455	642	6:60	3857	6:34	-0:26	-4	04
00	360	549	5:70	3539	5:47	-0:23	-4	14
10	345	499	5:60	3292	5:54	0:06	-1	06
10	337	590	6:50	5735	6:37	-0:13	-1	30
10	446	931	7:90	4743	7:73	-0:17	-1	71
10	373	1019	7:80	3731	7:42	-0:38	-5	69
10	342	750	6:50	4010	6:88	-0:02	-2	81
10	342	804	7:10	4214	7:06	-0:04	-8	04
10	335	994	7:80	3567	7:96	0:16	-6	25
10	358	557	6:30	3684	6:21	-0:09	-1	45
10	367	584	6:10	3194	6:03	-0:07	-9	35
00	379	411	5:00	5196	4:98	-0:02	-8	24
00	410	992	8:20	5269	7:98	-0:22	-0	96
10	341	188	9:70	4788	9:52	0:18	-2	77
00	366	928	7:70	4822	7:69	-0:01	-6	67
10	361	864	7:70	4732	7:74	0:04	-4	21
10	346	930	7:80	4668	7:70	-0:10	-5	00
00	353	1149	7:80	5266	8:05	0:25	-4	68
10	436	980	8:00	5919	7:55	-0:05	-3	77
10	359	1037	8:10	5066	7:81	-0:19	-2	38
10	348	1097	8:20	5206	8:07	-0:09	-1	58
10	357	838	7:30	4716	7:29	-0:01	-0	11
10	337	927	6:70	4761	7:37	0:07	-7	42
10	332	748	6:60	4153	6:56	-0:04	-8	09
10	358	1067	6:50	5874	6:33	-0:17	-6	74
10	381	772	6:70	3704	6:34	-0:05	-5	74
00	344	723	5:60	4137	5:47	-0:13	-3	61
00	333	486	5:60	3193	5:47	-0:13	-2	22

MK-76 MOD-5 WITH NEW COEFFICIENTS

DEG	TAS	ALT	ACTUAL DEL IVRY A-6E FREEZE TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	DIFFERENCES DIST	PER CENT TIME	PER CENT ERROR DIST
0.	361.	641.	3796.	33	07	267.	09	7.57
1.	344.	903.	4519.	15	15	-207.	1.087	-4.80
1.	365.	956.	4592.	7.92	02	-225.	-1.027	-5.15
1.	362.	933.	4694.	8.07	03	-223.	-0.639	-4.33
0.	379.	869.	4242.	7.49	17	-200.	-0.332	-7.58
0.	359.	883.	4504.	7.50	21	-357.	-2.772	-8.60
0.	354.	884.	4453.	7.22	18	-416.	-2.474	-8.83
-1.	344.	892.	4237.	7.93	07	-251.	-0.940	-10.87
0.	343.	884.	4412.	7.83	03	-198.	-0.493	-6.04
1.	344.	888.	4289.	7.73	07	-221.	-0.931	-4.52
0.	342.	937.	4655.	7.76	24	-349.	-0.143	-8.29
0.	367.	943.	4613.	8.13	17	-395.	-0.320	-6.35
0.	429.	1197.	6585.	8.78	18	-1285.	-2.256	-24.49
0.	362.	1195.	4682.	8.25	05	-176.	-0.331	-3.75
0.	355.	980.	4901.	8.56	14	-176.	-0.366	-3.48
1.	345.	1088.	5030.	7.90	30	-694.	-1.351	-15.97
1.	350.	901.	5040.	6.53	07	-246.	-0.312	-5.50
1.	353.	695.	4308.	5.87	16	-343.	-0.633	-8.71
0.	351.	498.	3355.	5.47	23	-268.	-0.453	-10.71
0.	352.	367.	3115.	4.70	30	-336.	-0.633	-10.94
0.	361.	363.	3119.	5.50	13	-319.	-0.550	-11.42
0.	343.	500.	3529.	7.94	10	-183.	-0.249	-4.59
0.	342.	913.	4235.	7.02	05	-233.	-0.229	-5.43
1.	329.	936.	4299.	8.78	02	-198.	-0.331	-5.09
1.	329.	943.	4206.	7.87	03	-241.	-0.331	-6.88
0.	329.	961.	4314.	7.51	09	-260.	-0.115	-6.55
0.	331.	889.	4105.	6.47	14	-143.	-0.101	-2.88
0.	337.	667.	4572.	8.01	13	-138.	-0.249	-6.55
0.	337.	1001.	5151.	8.88	14	-138.	-0.249	-7.01
0.	337.	1060.	5407.	8.60	00	-227.	-1.002	-4.26
1.	334.	1174.	6003.	8.60	10	-125.	-0.215	-5.29
1.	367.	1169.	5932.	11.08	07	-106.	0.016	-1.81

MK-76 MOD-5 WITH NEW COEFFICIENTS

DEG	TAS	ALT	ACTUAL DELIVERY A-6E FREEZE TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR	DIFFERENCE DIST
1.	356.	1761.	11.10	11.07	-0.03	-0.23	1.45	-125.
1.	365.	1713.	10.90	10.60	-0.10	-0.99	-2.28	-245.
1.	323.	1708.	10.70	10.89	0.10	-0.06	-4.46	-189.
1.	354.	904.	7.90	7.89	-0.01	-0.12	-4.56	-196.
0.	313.	521.	6.10	5.66	-0.44	-7.45	-12.08	-338.
0.	338.	479.	5.70	5.43	-0.27	-5.05	-11.37	-335.
0.	342.	435.	5.50	5.26	-0.24	-4.91	-11.10	-394.
0.	328.	391.	4.90	4.87	-0.03	-6.60	-6.74	-159.
0.	330.	379.	4.50	4.79	0.21	-0.38	-8.31	-225.
0.	350.	328.	4.30	4.14	-0.16	-3.88	-13.42	-338.
0.	343.	331.	4.50	4.33	-0.17	-3.85	-11.94	-286.
0.	328.	329.	4.70	4.44	-0.26	-5.75	-7.08	-369.
1.	338.	462.	5.60	5.42	-0.08	-1.76	-3.54	-210.
1.	326.	867.	7.70	7.59	-0.09	-1.28	-6.10	-306.
1.	321.	905.	8.10	7.88	-0.22	-2.87	-8.02	-432.
1.	394.	1050.	9.00	8.75	-0.25	-2.93	-4.76	-320.
2.	344.	612.	8.30	7.98	-0.32	-3.94	-3.95	-116.
1.	343.	792.	7.60	7.53	-0.07	-0.97	-2.31	-269.
0.	403.	631.	6.60	6.25	-0.35	-5.02	-10.43	-1050.
0.	429.	1540.	10.10	10.05	-0.05	-0.50	-1.19	-352.
0.	403.	1117.	10.00	10.32	0.32	0.02	-0.38	-279.
1.	350.	1173.	10.70	10.70	0.00	0.00	0.00	-179.
1.	324.	1147.	9.30	9.38	0.08	0.13	-0.47	-355.
1.	328.	465.	5.60	5.64	0.04	0.05	-0.39	-190.
1.	338.	512.	5.80	5.83	0.03	0.05	-0.56	-163.
1.	322.	492.	5.50	5.56	0.06	0.11	-0.47	-225.
1.	375.	1506.	10.20	10.36	0.14	0.14	-0.38	-223.
1.	326.	1384.	9.60	9.49	-0.11	-1.11	-4.75	-225.
0.	344.	1139.	9.50	9.49	-0.01	-0.10	-4.75	-223.
0.	325.	1199.	8.50	7.98	-0.52	-6.10	-4.53	-237.

MK-76 MOD-5 WITH NEW COEFFICIENTS

DEG	TAS	ALT	ACTUAL DELIVERY A-6E FREEZE TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT TIME	PER CENT ERROR
-1	353	1017	7.90	7.75	0.15	1.92	70
-1	356	999	8.00	7.68	0.32	4.00	-6.26
0	356	999	8.00	7.99	0.01	0.13	-4.63
0	423	1334	9.30	9.33	0.03	0.32	-5.24
0	436	1152	10.70	10.00	0.70	6.58	-5.91
0	352	1141	8.70	9.69	0.99	11.38	-5.91
2	334	1139	10.10	10.69	0.59	5.84	-4.03
0	334	1206	8.90	8.15	0.75	8.42	-4.46
1	307	1151	8.10	8.91	0.81	9.89	-4.46
0	336	1122	8.30	8.10	0.20	2.43	-6.20
0	335	1081	8.00	8.91	0.91	11.38	-5.48
0	335	843	7.30	7.31	0.01	0.13	-20.57
5	337	844	7.40	7.48	0.08	1.12	-1.72
-1	339	587	6.50	5.74	0.76	11.54	-10.79
0	340	587	6.00	5.74	0.26	4.33	-17.52
0	340	602	6.10	5.12	1.00	16.39	-4.57
0	335	565	5.90	5.94	0.04	0.67	-4.19
0	340	553	6.20	5.65	0.55	8.87	-4.49
0	341	553	6.80	5.87	0.93	13.68	-4.59
0	425	767	7.00	6.38	0.62	8.79	-4.01
0	335	855	7.50	7.38	0.12	1.60	-4.98
0	331	918	7.70	7.64	0.06	0.77	-6.01
0	334	919	7.70	7.66	0.04	0.52	-7.89
0	335	921	8.00	7.78	0.22	2.77	-4.45
0	335	1142	8.80	8.53	0.27	3.07	-5.60
-1	366	1966	9.10	8.00	1.10	12.08	-4.54
0	369	1005	8.10	7.81	0.29	3.57	-6.13
0	357	955	8.10	7.86	0.24	2.95	-7.09
1	356	968	8.10	7.96	0.14	1.71	-12.20
1	349	1929	8.20	7.69	0.51	6.20	-9.18
1	349	994	8.30	7.29	1.01	12.08	-5.39
-1	451	1027	7.00	8.06	1.06	15.14	-50.42
0	353	949	7.80	6.78	1.02	13.21	-52.62
-1	351	1022	7.20	8.09	0.89	12.36	-59.59
-1	361	926	7.90	7.36	0.54	6.84	-59.59

MK-76 MOD-5 WITH NEW COEFFICIENTS

[illegible]

HK-76 MOD-5 WITH NEW COEFFICIENTS

DEG	TAS	ALT	ACTUAL DELIVERY A-6E FREEZE DATA TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	DIFFERENCES DIST	PER CENT TIME	PER CENT ERROR
-1	342	1022	8.00	7.78	-0.22	-2319	-2.86	-56.70
-2	438	853	7.20	7.24	-0.04	-91	-0.51	-10.82
1	315	814	7.80	7.47	-0.33	-375	-4.47	-10.39
1	321	749	7.20	7.17	-0.03	-273	-0.47	-7.33
0	311	704	6.70	6.65	-0.05	-191	-0.79	-5.56
1	319	653	7.60	6.59	-0.01	-266	-0.18	-5.96
0	335	905	7.40	7.40	-0.00	-199	-0.36	-4.43
1	340	863	8.00	7.97	-0.03	-230	-0.30	-5.47
1	352	921	8.00	7.98	-0.02	-245	-0.30	-5.47
1	352	933	8.00	8.04	-0.04	-171	-0.46	-5.84
1	352	1075	8.70	8.65	-0.05	-285	-0.83	-6.51
1	328	1087	8.80	8.87	-0.07	-270	-0.76	-6.51
0	321	918	7.30	7.64	-0.34	-768	-4.49	-21.87
-2	345	543	6.50	5.38	-0.82	-15	-1.75	-21.87
0	348	573	6.90	5.80	-0.10	-772	-1.29	-11.20
0	357	627	6.40	6.26	-0.14	-289	-2.20	-78.40
0	357	543	6.10	6.58	-0.30	-394	-5.07	-65.06
1	355	980	8.90	8.22	-0.08	-530	-0.91	-15.78
1	350	1104	6.40	6.79	-0.39	-212	-0.79	-6.03
1	361	798	6.30	6.43	-0.03	-17	-0.48	-8.58
1	342	776	6.30	7.36	-0.66	-341	-1.46	-4.98
1	342	742	6.70	7.39	-0.69	-254	-1.76	-7.98
1	352	766	6.70	6.71	-0.01	-647	-9.88	-14.52
2	440	780	8.30	7.16	-0.72	-497	-5.46	-19.64
0	445	812	6.70	7.87	-0.43	-89	-5.46	-2.93
0	455	804	6.70	7.09	-0.17	-110	-5.46	-2.93
1	458	820	7.70	7.17	-0.23	-299	-3.43	-7.52
0	481	891	6.00	7.47	-0.02	-452	-5.03	-10.41
-1	350	606	7.20	7.29	-0.07	-222	-1.30	-4.73
0	359	1094	6.80	7.18	-0.11	-309	-0.54	-7.85
0	366	965	8.80	8.42	-0.38	-461	-2.53	-7.68
0	352	868	8.30	7.62	-0.12	-369	-2.48	-7.77
0	367	921	7.70	7.46	-0.04	-281	-0.35	-6.16

[illegible]

MK-76 MOD-5 WITH NEW COEFFICIENTS

DEG	TAS	ALT	ACTUAL DELIVERY A-6E FREEZE DATA TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT ERROR TIME	PER CENT ERROR DIST
00	332	1049	830	819	011	10	68
00	351	1109	850	844	006	55	57
00	354	962	770	760	010	7	68
00	338	987	810	794	016	40	18
00	345	1035	850	835	015	46	90
00	343	965	800	788	012	21	55
20	327	1258	910	894	021	08	20
00	342	1030	800	784	016	25	38
00	339	964	830	815	015	08	45
00	350	1011	870	857	013	18	24
00	353	966	820	807	013	32	70
00	440	853	620	611	009	01	30
00	436	820	680	663	023	80	76
-3	440	853	620	611	009	01	30
10	333	997	730	712	027	31	48
00	420	907	800	782	018	03	95
00	436	927	740	723	013	28	86
20	356	821	1090	1080	010	92	72
10	377	1375	980	968	012	94	40
10	373	1274	920	908	012	55	16
00	366	1446	990	970	020	75	59
00	348	1050	870	855	015	30	19
10	346	985	830	810	020	59	20
10	333	922	810	796	017	18	38
10	335	946	780	763	023	12	78
00	410	942	800	783	027	36	50
00	415	1013	810	797	023	50	98
00	423	1000	810	795	028	04	08
00	423	1091	820	805	025	09	47
00	422	1152	870	857	021	57	12
00	426	807	710	695	035	28	36

NK-76 MOD-5 WITH NEW COEFFICIENTS

DEG	TAS	ALT	ACTUAL DELIVERY A-6E FREEZE TIME	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	DIFFERENCES DIST	PER CENT TIME	PER CENT ERROR DIST
1:	418:	815:	7:80	5266:	0:22	-295:	86	5:59
1:	420:	998:	8:40	5275:	-0:00	-216:	-20:77	-3:75
1:	454:	857:	8:60	5399:	-0:20	-650:	-26:61	11:90
1:	356:	959:	8:10	4677:	-0:03	-118:	-2:35	-29:64
1:	358:	113:	8:58	6254:	0:02	-250:	0:42	-4:99
1:	425:	103:	8:54	4454:	-0:04	-162:	-0:32	-3:97
1:	372:	108:	8:67	4795:	0:07	-293:	0:68	-60:43
1:	376:	107:	8:29	4833:	0:31	-181:	-3:64	-7:21
0:	345:	110:	8:05	4858:	-0:05	-304:	-1:47	-6:25
0:	341:	111:	8:18	5041:	-0:12	-328:	-1:10	-6:23
0:	341:	104:	8:91	4713:	0:09	-292:	0:82	-4:28
0:	340:	970:	7:87	4504:	-0:07	-214:	-1:04	-6:25
0:	342:	723:	6:45	3872:	0:05	-244:	0:27	-6:28
-1:	340:	103:	8:13	4326:	-0:20	-310:	-2:03	-7:19
0:	340:	105:	8:20	4420:	-0:13	-334:	-2:38	-8:21
0:	366:	850:	8:30	4380:	-0:03	-346:	-1:41	-12:89
0:	326:	835:	7:80	3380:	-0:05	-333:	-0:65	-9:23
0:	426:	879:	7:77	3580:	-0:15	-345:	-1:03	-9:37
1:	394:	942:	7:90	4391:	-0:30	-134:	-1:50	-6:52
0:	369:	536:	7:57	3372:	-0:09	-341:	-1:33	-6:54
0:	369:	520:	8:10	3337:	-0:01	-256:	-1:36	-6:10
0:	448:	999:	8:19	3688:	-0:18	-274:	-2:69	-6:24
0:	432:	718:	6:72	3498:	-0:09	-242:	-2:15	-6:25
0:	429:	105:	10:21	4617:	-0:25	-303:	-2:48	-6:02
0:	437:	117:	10:00	7754:	-0:40	-158:	-2:50	-8:99
0:	439:	100:	8:74	4139:	-0:11	-280:	-1:50	-6:10
0:	330:	558:	8:09	3312:	-0:09	-306:	-1:48	-8:99
0:	330:	600:	8:28	3366:	-0:23	-328:	-2:20	-7:10
0:	348:	103:	8:11	4448:	-0:16	-323:	-2:29	-7:28
0:	349:	117:	8:49	4125:	-0:21	-306:	-2:22	-9:74
-1:	346:	956:	7:81	4868:	-0:19	-319:	-2:22	-9:74
0:	342:	126:	8:97	4518:	-0:21	-393:	-2:22	-9:74
0:	343:	190:	7:58	5205:	-0:21	-390:	-2:22	-9:74
0:	343:	119:	7:40	5205:	-0:21	-390:	-2:22	-9:74

DEG	TAS	ALT	ACTUAL DELIVERY A-6E FREEZE DIST	NPS MODIFIED BOEING ALGORITHM TIME	DIFFERENCES TIME	PER CENT ERROR TIME	PER CENT ERROR DIST
00	347	868	750	742	008	038	51
00	332	867	760	742	018	140	83
00	333	902	770	758	013	170	80
00	363	898	760	753	002	028	14
00	371	846	740	733	007	097	16
00	354	756	790	648	009	355	99
01	347	731	720	704	042	238	99
11	333	718	720	706	016	293	16
10	333	852	770	766	046	298	93
00	421	954	800	778	008	102	33
00	425	858	750	739	015	022	99
00	455	825	740	735	001	340	26
01	465	978	860	836	024	181	03
10	425	933	790	772	018	233	91
00	426	931	800	772	001	233	27
00	425	926	810	778	030	322	99
00	419	945	810	770	003	322	91
01	309	941	870	802	008	128	49
31	323	1064	820	761	009	195	43
10	323	891	730	725	005	160	60
00	326	847	750	730	002	165	16
01	326	906	750	733	018	318	66
00	323	880	750	737	020	378	50
00	305	903	750	747	003	261	83
00	346	1030	830	757	007	309	42
00	396	1014	840	759	018	320	61
00	396		840	812	001	340	50


```

NLINES = NLINES + 1
IF (NLINES .EQ. 40) GO TO 50
RETURN

```

Σ

```

CLEAR PAGE AT END OF JOB
70 WRITE (6,35)
STOP
END

```

```

SUBROUTINE SETDAT
COMMON CC(3,3,2), CT(2,2), IDNO, DEG, VKTS, ALT, TABT, TABX, SET,
SWITCH, G, RAD, A, AA, YT, VYK, FRAC, IREF, DTI, DS, VMU2,
CFORM1, CFORM2, DM1, DM2, DKG1, DKG2, VE, SL, DMAX, ITYPE,
FN, IBOTH, U, TH, DEL, V, VXA, VYA, CF, DM, DKG, VX, VY,
MSG, X1, X2, Y, YA, YB, D, YD, VXD, VYO, RHO, API, AP2,
AN1, AN2, IREG, CKDG, TS, DELT, DELX, PCNTT, PCNTX, LASTID

```

C

```

IF (SET) 1,2,3

```

Σ

```

PROGRAM CONSTANTS - SET ONLY ONCE AT BEGINNING OF EXECUTION

```

```

1 G = 32.174
RAD = 0.0174533
A = 0.7
AA = 0.5/A
YT = 0.0
VYK = -5.0
FRAC = 0.5
RETURN

```

Σ

```

WEAPON CONSTANTS - SET ONCE FOR EACH DIFFERENT WEAPON ID NUMBER

```

```

2 CFORM1 = 0.0
CFORM2 = 0.0
DM1 = 0.0
DM2 = 0.0
DKG1 = 0.0
DKG2 = 0.0
VMU2 = 0.0
FA = 0.0
VE = 0.0
SL = 0.0
DS = 0.0
DMAX = 5.0
ITYPE = -1
IBOTH = 1

```

C

```

C   PROGRAM VARIABLES - SET FOR EACH SET OF INPUT PARAMETERS
3   U = VKTS * 1.6878
    DEL = ATAN2(VE,U)
    V = SQRT(U*U + VE*VE)
    THETA = DEG * RAD
    VXA = (V+VMUZ) * COS(THETA-DEL)
    VYA = (V+VMUZ) * SIN(THETA-DEL)
    RETURN
    END

SUBROUTINE DECODE
COMMON CC(3,3,2), CT(2,2), IDNO, DEG, VKTS, ALT, TABT, TABX, SET,
1   SWITCH, G, RAD, A, AA, YF, VYK, FRACT, IREF, DTI, DS, VMUZ,
2   CFORM1, CFORM2, DM1, DM2, DKG1, DKG2, VE, SL, DMX, ITYPE,
3   FN, IBOTH, U, DEL, V, THETA, VXA, VYA, CF, DM, DKG, VX, VY,
4   MSTG, X, Y, YA, DIV, D, YD, VXD, VYD, RHO, API, AP2,
5   AN1, AN2, IREG, CKOG, TS, DELT, DELX, PCNTT, PCNTX, LASTID,
    GO TO (1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,
1   21,22,23,24,25,26,27,28), IDNO

C   WEAPON CONSTANTS FOR THE MK 43 UNRETARDED
1   IREF= 4
    DKG1= 2.5506E-03
    DTI = 3
    GO TO 31

C   WEAPON CONSTANTS FOR THE MK 57 UNRETARDED
2   IREF= 4
    DKG1= 6.2994E-03
    DTI = 3
    GO TO 31

C   WEAPON CONSTANTS FOR THE MK 61 UNRETARDED
3   IREF= 4
    DKG1= 4.01E-03
    DTI = 3
    GO TO 31

C   WEAPON CONSTANTS FOR THE MK 116 WETEYE
4   IREF= 2
    DMX = 3.0
    CFORM1= 3.9235E-03
    DKG1= 2.754E-03
    DTI = 2
    GO TO 31

```


C WEAPON CONSTANTS FOR THE MK 76 MOD 5 WITH LUG

5 IREF= 2
DMAX = 3.0
CFORM1= 3.9077E-03
DKG1= 6.3648E-03
DTI = 1
GO TO 31

C WEAPON CONSTANTS FOR THE MK 77 MOD 1,2, AND 4 FIREBOMB

6 IREF= 4
DMAX = 2.021266
DKG1= 0.021266
DTI = 1
GO TO 31

C WEAPON CONSTANTS FOR THE MK 81 CONICAL FIN MECH FUZE

7 IREF= 1
CFORM1= 2.5704
DTI = 3
GO TO 31

C WEAPON CONSTANTS FOR THE MK 81 SNAKEYE UNRETARDED

8 IREF= 4
DMAX = 3.0
DKG1= 9.767E-03
DTI = 2
GO TO 31

C WEAPON CONSTANTS FOR THE MK 82 CONICAL FIN MECH FUZE

9 IREF= 1
CFORM1= 2.064
DTI = 3
GO TO 31

C WEAPON CONSTANTS FOR THE MK 82 MOD 0 & 1 CONICAL FIN ELEC FUZE

10 IREF= 1
CFORM1= 1.4932
DTI = 3
GO TO 31

C WEAPON CONSTANTS FOR THE MK 83 CONICAL FIN MECH FUZE

11 IREF= 1
CFORM1= 1.3431
DTI = 1
GO TO 31

C WEAPON CONSTANTS FOR THE MK 83 CONICAL FIN ELEC FUZE

12 IREF= 1

CFORM1= 1.21
 DTI = 3;
 GO TO 31
 C WEAPON CONSTANTS FOR THE MK 84 CONICAL FIN MECH AND ELEC FUZE
 13 IREF= 1
 CFORM1= 1.0
 DTI = 3;
 GO TO 31
 C WEAPON CONSTANTS FOR THE MK 117 A1 WITH M131 TAILFIN
 14 IREF= 1
 CFORM1= 3.12
 DKG1= -1.223E-03
 DTI = 3;
 GO TO 31
 C WEAPON CONSTANTS FOR THE MK 86 WET SAND FILLED
 15 IREF= 1
 DMAX = 3
 CFORM1= 3.4972
 DTI = 2;
 GO TO 31
 C WEAPON CONSTANTS FOR THE MK 88 WET SAND FILLED
 16 IREF= 1
 CFORM1= 1.605
 DTI = 3;
 GO TO 31
 C WEAPON CONSTANTS FOR THE MK 82 SNAKEYE UNRETARDED
 17 IREF= 4
 DMAX = 3
 DKG1= 0.007329
 DTI = 1;
 GO TO 31
 C WEAPON CONSTANTS FOR THE MK 82 SNAKEYE RETARDED
 18 IREF= 1
 ITYPE= 1
 IBOTH= 2
 CFORM2= 1.6895E-02
 DKG1= 7.329E-03
 DKG2= 0.17166
 DM2= 0.38
 DS= 0.6617
 SL= -0.000269
 DTI = 2.0


```

GO TO 31
C WEAPON CONSTANTS FOR THE SADEYE T1 = 4.0
19 IREF= 1
I TYPE= 1
IBOTH= 2
CFORM1= 2.0754
CFORM2= 0.2217
DS = 4.267
DTI = 1.5
GC TO 31

C WEAPONA CONSTANTS FOR THE ROCKEYE II T1 = 4.0
20 IREF= 1
I TYPE= 1
IBOTH= 2
CFORM1= 2.2973
CFORM2= 1.1136E-02
DM1= 0.32
DM2= 0.41
DKG1= 8.175E-03
DKG2= 0.16885
DS = 4.06
DTI = 2.0
GC TO 31

C WEAPON CONSTANTS FOR THE CBU T1 = 4.0
21 IREF= 1
I TYPE= 1
IBOTH= 2
CFORM1= 2.2404
CFORM2= 0.1178
DS = 4.0
DTI = 1.62
GC TO 31

C WEAPON CONSTANTS FOR THE MK 81 SNAKEYE RETARDED
22 IREF= 1
I TYPE= 1
IBOTH= 2
CFORM2= 2.30625E-02
DKG1= 9.767E-03
DKG2= 0.23287
DM2= 0.38
DS = 0.679
SL = -0.000303
DTI = 1.622
GC TO 31

```

WEAPON CONSTANTS FOR THE GUN

23 IREF= 3
 DMAX= 1.5
 CFORM1= 2.9964
 DKG1= -0.014992
 VMU2= 3300.0
 DTI= 0.5
 GC TO 31

WEAPON CONSTANTS FOR THE ROCKETS

24 IREF= 3
 ITYPE= 2
 CFORM1= 0.82
 CFORM2= 1.0
 FN= 1746.0
 DS= 1.4225
 DTI= 1
 GC TO 31

WEAPON CONSTANTS FOR THE MK 43 RETARDED 0.4 SEC DELAY

25 IREF= 4
 ITYPE= 0
 DS= 0.98
 DKG2= 1.48
 DTI= 0.31
 GC TO 31

WEAPON CONSTANTS FOR THE MK 57 RETARDED 0.8 SEC DELAY

26 IREF= 4
 ITYPE= 0
 DS= 0.89
 DKG2= 2.0
 DTI= 0.22
 GC TO 31

WEAPON CONSTANTS FOR THE MK 61 RETARDED 0.6 SEC DELAY

27 IREF= 4
 ITYPE= 0
 DS= 0.89
 DKG2= 2.70
 DTI= 0.1
 GC TO 31

WEAPON CONSTANTS FOR THE MK 106 MOD 4

28 IREF= 2
 ITYPE= 2
 CFORM1= 0.1514


```

CFORM2= 0.1514
DS = 0.5
DTI = 0.8

C SET THE REFERENCE DRAG CURVE COEFFICIENTS AND CUTS
31 GO TO (32,33,34,51), IREF
32 CC (1,1,1) = 1.572924E-03
CC (1,2,1) = 0.0
CC (1,3,1) = 0.0
CC (2,1,1) = 4.678409E-02
CC (2,2,1) = -0.109711069
CC (2,3,1) = -0.654801E-02
CC (3,1,1) = -0.116380157
CC (3,2,1) = 0.217643894
CC (3,3,1) = -9.767068E-02
CT (1,1) = 0.834
CT (2,1) = 0.977
IF (180TH-1) 33,51,33

C
33 CC (1,1,180TH) = 3.53503924
CC (1,2,180TH) = -3.34778216
CC (1,3,180TH) = -2.87262413
CC (2,1,180TH) = 1.2616503
CC (2,2,180TH) = -27.4162512
CC (2,3,180TH) = -21.7308359
CC (3,1,180TH) = -23.7915472
CC (3,2,180TH) = -44.2607764
CC (3,3,180TH) = -14.4996046
CT (1,2,180TH) = 0.622
CT (2,180TH) = 0.885
GO TO 51

C
34 CC (1,1,1) = 0.104115
CC (1,2,1) = -0.230347
CC (1,3,1) = -0.167644
CC (2,1,1) = -0.194037
CC (2,2,1) = -0.401478
CC (2,3,1) = -7.332461E-02
CC (3,1,1) = -2.03275E-03
CC (3,2,1) = -2.44682E-03
CT (1,1) = 1.032
CT (2,1) = 1.30
RETURN
51 END

```

```

SUBROUTINE TRAJ
COMMON CC(3,3,2), CT(2,2), IDNO, DEG, VKTS, ALT, TABT, TABX, SET,
SWITCH, G, RAD, A, AA, YI, VYK, FRACT, IREF, DTI, DS, VMU2,
CFORM1, CFORM2, DM1, DM2, DKG1, DKG2, VE, SL, DMAX, VX, VY,
FN, IBOOTH, U, DEL, V, THETA, VXA, VYA, CF, DM, DKG, VY,
MSTG, X1, X2, IREG, CRDG, TS, DELI, DELX, PCNTT, PCNTX, LASTID,
AN1, AN2, IREG, CRDG, TS, DELI, DELX, PCNTT, PCNTX, LASTID

```

C INITIALIZE THE VARIABLES FOR THE TRAJECTORY SUBROUTINE

```

CF= CFORM1
DP= DM1
DKG= DKG1
MSTG= 1
X= 0.0
Y= 0.0
VX= VXA
VY= VYA
TH= FN
YA= ALT

```

C TYPE OF DRAG
IF (ITYPE) 2,1,1

C SET STEP SIZE FOR FIRST STAGE DRAG
1 D= DS+SL*U
GO TO 3

C COMPUTE STEP SIZE
2 D= DMAX

C CALL RUNGE KUTTA SUBROUTINE
3 CALL RUNGE
DTV= 1/G*(VY+SQRT(VY**2+2.*G*(Y)))
D= DTI
IF ((IDNO.LE.17).OR.(IDNO.EQ.23)) GO TO 4

C SET THE SECOND STAGE DRAG PARAMETERS
MSTG= 2
IF (ITYPE.EQ.2) MSTG= 1
DKG= DKG2
DP= DM2
CF= CFCRM2
TH= 0.0
4 IF (DTV - D) 5,3,3

C SET THE STEP SIZE TO THE VACUUM DROP TIME REMAINING
5 D= DTV


```

C SET THE DRAG PARAMETERS FOR THE FINAL INTEGRATION STEP
IF ((IDNO.LE.17).OR.(IDNO.EQ.23)) GO TO 6
MSTG=2
IF (ITYPE.EQ.2) MSTG = 1
DKG= DKG2
DM= DM2
TH=0.0
CF= CFORM2

C CALL RUNGE FOR THE FINAL INTEGRATION STEP
6 CALL RUNGE
DTV = 1/G*(VY+SQRT(VY**2+2.*G*(Y)))

C UPDATE THE TIME OF FALL AND THE DOWN RANGE TRAVEL
T = T + DTV
X = X + DTV*VX
RETURN
END

SUBROUTINE RUNGE
COMMON CC(3,3,2), CT(2,2), IDNO, DEG, VKTS, ALT, TABT, TABX, SET,
SWITCH, GFORM2, DM1, DM2, DKG1, DKG2, VE, SL, DMAX, ITYPE,
FN, IBOTH, U, DEL, V, THETA, VXA, VYA, CF, DM, DKG, VX, VY,
MSTG, X1, TH, Y1, DTV, D, YD, VXD, VYD, RHO, API, AP2,
AN1, AN2, IREG, CKDG, TS, DELT, PCNTT, PCNTX, LASTID,
AD=A*D
YC=Y
VXQ= VX
VYQ= VY
RHO= 2.37576E-03-Y*(6.87557E-08-Y*6.71618E-13)
CALL DERIV

C UPDATE POSITION AND VELOCITIES
Y= YO+AD*VY
RHO= 2.37576E-03-Y*(6.87557E-08-Y*6.71618E-13)
API= AP2
AN1= AN2
VX= VXQ+AD*AN1
VY= VYQ+AD*API
CALL DERIV

C COMPUTE TIME, POSITION AND VELOCITIES

```

```

T= T+D*(VXO+AA*(VX-VXO))
X= X+D*(VXO+AA*(VX-VXO))
Y= YO+D*(VYO+AA*(VY-VYO))
VX= VXO+D*(ANI+AA*(AP2-ANI))
VY= VYO+D*(API+AA*(AP2-API))
RETURN
END

SUBROUTINE DERIV
COMMON CC(3,3,2), IDNO, DEG, VKTS, ALT, TABT, TABX, SET,
SWITCH, G, RAD, AA, YI, VYK, FRAC, IREF, DT, OS, VMUZ,
CFORM, DM1, DM2, CKG1, DKG2, VE, SL, DMX, ITYPE,
FM, IBOTH, U, THETA, VXA, VYA, CF, DM, DKG, VX, VY,
MSTG, X2, TH, YA, DIV, DY, VXO, VYO, RHO, API, AP2,
ANI, AN2, IREG, CKDG, DELT, DELX, PCNTT, PCNTX, LASTID
C COMPUTE THE TOTAL VELOCITY AND THE MACH OF THE WEAPON
V = SQRT(VX*VX+VY*VY)
CM = V*(8.9544E-04+3.26E-09*Y)+DM
C DETERMINE THE REGION OF THE DRAG CURVE THAT IS APPLICABLE
IF (CM-CT(1,MSTG)) 10,10,20
10 IREG= 1
GO TO 30
20 IF (CM-CT(2,MSTG)) 30,30,40
30 IREG= 2
GO TO 50
40 IREG= 3
C DO INTERMEDIATE BALLISTIC CALCULATION
50 CKDG = DKG + CF*(
(CC(IREG,1,MSTG)+(CC(IREG,2,MSTG)+CC(IREG,3,MSTG)*CM)*CM)
HH= TW/V-RHO*CKDG*V
AN2= HH*VX
AP2= HH*VY-G
RETURN
END

```



```
/* PLM VERSION OF THE BALLISTICS ALGORITHM */
```

```
100H: /* PROGRAM DECLARATIONS */
      DECLARE BOOS LITERALLY 3FFDH,
      BOOT LITERALLY 0,
      LF LITERALLY 10,
      CR LITERALLY 13,
      TRUE LITERALLY 1,
      FOREVER LITERALLY 1,
      WHILE TRUE,
      IBFCB (33) BYTE INITIAL (0,0,0,0),
      INPUT$BUFFER (128) BYTE,
      OUTPUT$BUFFER (128) BYTE,
      OUTPTR BYTE INITIAL (255),
      IDNO BYTE,
      (DEG,ALT,VKTS,TM,X) (3) BYTE;
```

```
/****** PROCEDURE CALLS TO THE DISK OPERATING SYSTEM *****/
```

```
MON1: PROCEDURE (F,A) ;
      DECLARE F BYTE, A ADDRESS;
      GO TO BOOS;
      RETURN;
      END MON1;
```

```
MON2: PROCEDURE (F,A) BYTE;
      DECLARE F BYTE, A ADDRESS;
      GO TO BOOS;
      END MON2;
```

```
PRINT: PROCEDURE (A);
      DECLARE A ADDRESS;
      CALL MON1 (9,A);
      RETURN;
      END PRINT;
```

```
PRINTCHAR: PROCEDURE (CHAR);
      DECLARE CHAR BYTE;
      CALL MON1 (2,CHAR);
      RETURN;
      END PRINTCHAR;
```

```
CRLF: PROCEDURE;
      CALL PRINTCHAR (CR);
      CALL PRINTCHAR (LF);
      RETURN;
      END CRLF;
```



```

DISK$ERROR: PROCEDURE;
CALL CRF;
CALL PRINT ('DISK ERROR $');
CALL CRF;
GO TO BOOT;
END DISK$ERROR;

CONVERT$ERROR: PROCEDURE;
CALL CALF;
CALL PRINT ('CONVERSION ERROR $');
CALL CRF;
GO TO BOOT;
END CONVERT$ERROR;

DISKWRITE: PROCEDURE (FCB) BYTE;
DECLARE FCB ADDRESS;
IF MON2(21,FCB) <> 0 THEN CALL DISK$ERROR;
END DISKWRITE;

DISKREAD: PROCEDURE (FCB) BYTE;
DECLARE FCB ADDRESS;
IF MON2(20,FCB) <> 0 THEN CALL DISK$ERROR;
END DISKREAD;

SETDMA: PROCEDURE (A);
DECLARE A ADDRESS;
CALL MON1 (26,A);
RETURN;
END SETDMA;

MAKE: PROCEDURE (FCB);
DECLARE FCB ADDRESS;
CALL MON1 (19,FCB);
IF MON2 (22,FCB) = 255 THEN CALL DISK$ERROR;
RETURN;
END MAKE;

OPEN: PROCEDURE (FCB);
DECLARE FCB ADDRESS;
IF MON2(15,FCB) = 255 THEN CALL DISK$ERROR;
RETURN;
END OPEN;

CLOSE: PROCEDURE (FCB);
DECLARE FCB ADDRESS;
IF MON2(16,FCB) = 255 THEN CALL DISK$ERROR;
RETURN;

```

```

ENC CLOSE:

BEGINNING: PROCEDURE:
CALL PRINT('EXECUTION BEGINS $');
CALL CRLF;
CALL MAKE (.OBFCB);
OBFCB(32) = 0;
CALL OPEN (.IBFCB);
IBFCB(32) = 0;
RETURN;
END BEGINNING:

TERMINATE: PROCEDURE:
DO WHILE OUTPTR < 127;
  OUTPUT$BUFFER (OUTPTR := OUTPTR + 1) = 30H;
END;
CALL SETDMA (.OUTPUT$BUFFER);
IF DISKWRITE (.OBFCB) <> 0 THEN CALL DISK$ERROR;
CALL CLOSE (.OBFCB);
CALL PRINT ('PROGRAM COMPLETE $');
CALL CRLF;
GO TO BOOT;
ENC TERMINATE:

GET$NEXT$BYTE: PROCEDURE BYTE:
DECLARE INPTR BYTE INITIAL (127);
IF INPTR >= 127 THEN
  DO;
    CALL SETDMA (.INPUT$BUFFER);
    IF DISKREAD (.IBFCB) <> 0 THEN CALL DISK$ERROR;
    INPTR = 255;
  END;
RETURN INPUT$BUFFER (INPTR := INPTR + 1);
END GET$NEXT$BYTE:

INPUT: PROCEDURE:
DECLARE I BYTE;
IF (IDNO := GET$NEXT$BYTE) = 0 THEN CALL TERMINATE;
DO I = 0 TO 2;
  DEG(I) = GET$NEXT$BYTE;
END;
DO I = 0 TO 2;
  VKTS(I) = GET$NEXT$BYTE;
END;
DO I = 0 TO 2;
  ALT(I) = GET$NEXT$BYTE;

```



```

END:
RETURN:
END INPUT:

HEX$TO$ASCII: PROCEDURE (HEX$CHAR) BYTE:
DECLARE (HEX$CHAR, ASCII$CHAR) BYTE:
IF (HEX$CHAR >= 00H) AND (HEX$CHAR <= 09H) THEN
    ASCII$CHAR = HEX$CHAR + 30H;
ELSE IF (HEX$CHAR >= 0AH) AND (HEX$CHAR <= 0FH) THEN
    ASCII$CHAR = HEX$CHAR + 37H;
ELSE CALL CONVERT$ERROR;
RETURN ASCII$CHAR;
ENC HEX$TO$ASCII;

PUT$NEXT$BYTE: PROCEDURE (TWO$HEX$CHAR);
DECLARE (TWO$HEX$CHAR, ASCII1, ASCII2) BYTE:
ASCII2 = HEX$TO$ASCII (TWO$HEX$CHAR AND 0FH);
ASCII1 = HEX$TO$ASCII (SHR(TWO$HEX$CHAR, 4) AND 0FH);
IF OUTPUTPTR = 127 THEN
    GO:
CALL SETDMA (, OUTPUT$BUFFER);
IF DISKWRITE (, 0BFCB) <> 0 THEN CALL DISK$ERROR;
OUTPUTPTR = 255;
END:
OUTPUT$BUFFER (OUTPUTPTR := OUTPUTPTR + 1) = ASCII1;
OUTPUT$BUFFER (OUTPUTPTR := OUTPUTPTR + 1) = ASCII2;
RETURN:
END PUT$NEXT$BYTE;

OUTPUT: PROCEDURE:
DECLARE I BYTE:
DO I = 0 TO 2:
    CALL PUT$NEXT$BYTE (TM(I));
END:
DO I = 0 TO 2:
    CALL PUT$NEXT$BYTE (X(I));
END:
RETURN:
END OUTPUT:

/***** END OF PROCEDURE CALLS TO THE DISK OPERATING SYSTEM *****/
/***** MATHEMATICAL FLOATING POINT PACKAGE *****/

/* VARIABLES GLOBAL TO THE FLOATING POINT PACKAGE */
DECLARE ZE BYTE, ZZ ADDRESS,
YE BYTE, XE BYTE;

```

```

ADJUST: PROCEDURE;
/* PROCEDURE TO LEFT JUSTIFY MANTISSA IN BINARY */
DECLARE I BYTE;
DO I = 0 TO 15;
IF (ZZ AND 8000H) = 8000H THEN RETURN;
ZZ = SHL(ZZ,1);
ZE = ZE - 1;
END;
ENC ADJUST;

ADD: PROCEDURE (XA, YA, ZA);
DECLARE (XA, YA, ZA, XX, YY) ADDRESS, BYTE,
        X BASED XA BYTE,
        Y BASED YA BYTE,
        Z BASED ZA BYTE;

/* DETERMINE DIFFERENCE IN EXPONENTS */
XE = X(2) AND 7FH;
YE = Y(2) AND 7FH;
IF XE > YE THEN RANGE = XE - YE;
ELSE RANGE = YE - XE;

/* CHECK TO SEE IF NUMBERS ARE WITHIN SIGNIFICANCE RANGE */
IF RANGE > 15 THEN
DO;
/* VARIABLES NOT WITHIN SIGNIFICANCE RANGE */
IF XE > YE THEN
DO;
X; Z(1) = X(1); Z(2) = X(2);
RETURN;
END;
Z = Y; Z(1) = Y(1); Z(2) = Y(2);
RETURN;
END;

/* VARIABLES ARE WITHIN RANGE OF SIGNIFICANCE */
/* FORM MANTISSA */
XX = SHL(DOUBLE(X),8) OR X(1);
YY = SHL(DOUBLE(Y),8) OR Y(1);
IF (X(2) AND 80H) = (Y(2) AND 80H) THEN SIGNSEQUAL = 1;
ELSE SIGNSEQUAL = 0;

/* EXPONENTS EQUAL */
IF XE = YE THEN
DO;

```



```

/* Y > X */
IF YY > XX THEN
DO:
ZE = Y(2);
IF SIGNSEQUAL THEN GO TO EXIT1;
GO TO EXIT2;
END;

/* X > Y */
IF YY < XX THEN
DO:
ZE = X(2);
IF SIGNSEQUAL THEN GO TO EXIT1;
GO TO EXIT3;
END;

/* X = Y */
IF SIGNSEQUAL THEN
DO:
Z = X;
Z(1) = X(1); Z(2) = X(2) + 1;
RETURN;
END;
Z = 0; Z(1) = 0; Z(2) = 0;
RETURN;
END;

/* EXPONENT OF X > EXPONENT OF Y */
IF XE > YE THEN
DO:
ZE = X(2);
YY = SHR(YY, RANGE);
IF SIGNSEQUAL THEN GO TO EXIT1;
GO TO EXIT3;
END;

/* EXPONENT OF Y > EXPONENT OF X */
ZE = Y(2);
XX = SHR(XX, RANGE);
IF SIGNSEQUAL THEN GO TO EXIT1;
GO TO EXIT2;

/* WHEN SIGNS OF THE MANTISSA ARE EQUAL THE NUMBERS ARE ADDED */
EXIT1:
ZZ = XX + YY;
IF CARRY THEN
DO:
ZZ = SCR(ZZ, 1);

```

```

ZE = ZE + 1;
END;
Z = HIGH(ZZ); Z(1) = LOW(ZZ); Z(2) = ZE;
RETURN;

/* WHEN THE SIGNS ARE DIFFERENT AND Y > X */
EXIT2:
ZZ = YY - XX;
CALL ADJUST;
Z = HIGH(ZZ); Z(1) = LOW(ZZ); Z(2) = ZE;
RETURN;

/* WHEN SIGNS ARE DIFFERENT AND X > Y */
EXIT3:
ZZ = XX - YY;
CALL ADJUST;
Z = HIGH(ZZ); Z(1) = LOW(ZZ); Z(2) = ZE;
RETURN;
ENC ADD;

SUB: PROCEDURE (XA, YA, ZA);
/* FLOATING POINT SUBTRACTION ROUTINE */
DECLARE
  XA, YA, ZA ADDRESS,
  YY BASED YA BYTE,
  YYMINUS (3) BYTE;
  YYMINUS = YY;
  YYMINUS(1) = YY(1); XOR 80H;
  YYMINUS(2) = YY(2);
  CALL ADD (XA, YYMINUS, ZA);
  RETURN;
ENC SUB;

MULT: PROCEDURE (XA, YA, ZA);
/* FLOATING POINT MULTIPLY ROUTINE */
DECLARE
  XA, YA, ZA, XX, YY ADDRESS,
  I BYTE,
  X BASED XA BYTE,
  Y BASED YA BYTE,
  Z BASED ZA BYTE;

/* IF EITHER NUMBER IS ZERO THEN RETURN A ZERO */
IF (X=0) OR (Y=0) THEN
  Z = 0; Z(1) = 0; Z(2) = 0;
  RETURN;
END;

```



```

/* IF NUMBERS ARE NON-ZERO */
XX = SHL(DOUBLE(X),8) OR X(1);
YY = SHL(DOUBLE(Y),8) OR Y(1);
ZZ = 7FFFH;

DO I=0 TO 14;
  YY = SCR(YY,1);
  IF CARRY THEN ZZ = ZZ + XX;
  ZZ = SCR(ZZ,1);
END;

ZZ = ZZ + XX;
IF CARRY THEN
  DO;
    ZZ = SCR(ZZ,1);
    ZE = 0;
  END;
ELSE ZE = -1;

/* ADD EXPONENTS */
Z(2) = ((X(2) AND 7FH) + (Y(2) AND 7FH) - 40H + ZE)
      OR ((X(2) AND 80H)
      XOR (Y(2) AND 80H));
Z = HIGH(ZZ);
Z(1) = LOW(ZZ);
RETURN;
END MULT;

COMPARE: PROCEDURE (XA, YA) BYTE;
/* FLOATING POINT COMPARISON ROUTINE */
/* X < Y COMPARE = 0 */
/* X = Y COMPARE = 1 */
/* X > Y COMPARE = 2 */
DECLARE (XA, YA, XX, YY) ADDRESS,
        X BASED YA BYTE,
        Y BASED YA BYTE,
        (XSIGN, YSIGN) BYTE;

XSIGN = X(2) AND 80H;
YSIGN = Y(2) AND 80H;

/* SIGNS EQUAL */
IF (XSIGN = YSIGN) THEN
  DO;
    XE = X(2) AND 7FH;
    YE = Y(2) AND 7FH;
    XX = SHL(DOUBLE(X),8) OR X(1);

```

```

YY = SHL(DOUBLE(Y),8) OR Y(1);
/* SIGNS POSITIVE */
IF XSIGN = 0 THEN
DO:
  IF XE > YE THEN RETURN 2;
  IF XE < YE THEN RETURN 0;
  IF XX > YY THEN RETURN 2;
  IF XX < YY THEN RETURN 0;
  RETURN 1;
END;

/* SIGNS NEGATIVE */
IF XE > YE THEN RETURN 0;
IF XE < YE THEN RETURN 2;
IF XX > YY THEN RETURN 0;
IF XX < YY THEN RETURN 2;
RETURN 1;
END;

/* SIGNS UNEQUAL */
IF XSIGN = 0 THEN RETURN 2;
RETURN 0;
END COMPARE;

DIV: PROCEDURE (XA, YA, ZA);
/* FLOATING POINT DIVIDE ROUTINE */
DECLARE X BASED YA BYTE;
        Y BASED ZA BYTE;
        Z(1) SGN) BYTE;
        C(3) BYTE;

IF X = 0H THEN
DO:
  Z = 0H; Z(1) = 0H; Z(2) = 0H;
  RETURN;
END;

SGN = (X(2) AND 80H) XOR (Y(2) AND 80H);
XE = X(2) AND 7FH;
YE = Y(2) AND 7FH;
ZE = XE - YE + 40H;
XX = SHL(DOUBLE(X),8) OR X(1);
YY = SHL(DOUBLE(Y),8) OR Y(1);

IF XX = YY THEN

```



```

DO:      ZZ = 8000H;      ZE = ZE + 1;
GO TO EXIT;
END;

IF YY > XX THEN YY = SHR(YY,1);
ELSE ZE = ZE + 1;

ZZ = 0H;
DO I = 1 TO 16;
  TEMP = XX - YY;
  IF CARRY THEN
    DO:
      IF XX > 80H THEN YY = SHR(YY,1);
      ELSE XX = SHL(XX,1);
      ZZ = SHL(ZZ,1);
      END;
    ELSE
      DO:
        ZZ = SHL(ZZ,1) + 1;
        XX = SHL(TEMP,1);
        END;
      END;
    END;

/* OVERFLOW/UNDERFLOW */
EXIT: IF ZE > 7FH THEN
  DO:
    IF ZE > YE THEN
      DO: OFFH; Z(1) = OFFH; Z(2) = SGN OR 07FH;
      END;
    ELSE
      DO:
        Z(1) = 0; Z(2) = 0;
        END;
      RETURN;
    END;
  Z = HIGH(ZZ); Z(1) = LOW(ZZ); Z(2) = SGN OR ZE;
  RETURN;
END DIV;

SORT: PROCEDURE (XA,ZA);
/* FLOATING POINT SQUAREROOT ROUTINE */
/* ASSUME VARIABLE IS POSITIVE REAL NUMBER */
DECLARE (XA,ZA) ADDRESS;
/* X BASED XA BYTE,

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```

Z BASED ZA BYTE,
R BYTE,
B (3) BYTE,
T (3) BYTE;

```

```

ZE = X(2) - 40H;
/* INITIAL APPROXIMATION OF ROOT IS */
/* (1+MANT)/2 * EXP/2 */
IF ZE < 80H THEN T(2) = SHR(ZE,1) + 40H;
ELSE T(2) = 40H - SHR(-ZE,1);
ZZ = SHL(DOUBLE(X),8) OR X(1);
ZZ = SHR(ZZ,1) OR 8000H;
T = HIGH(ZZ);
T(1) = LOW(ZZ);

```

```

DO R = 1 TO 3;
CALL DIV (XA, T, B);
CALL ADD (B, T, T);
T(2) = T(2) - 1;
END;

```

```

Z = T;
Z(1) = T(1); Z(2) = T(2);
RETURN;
END SORT;

```

```

COS$SIN: PROCEDURE (THA, MAGA);
/* FLOATING POINT COSINE AND SINE FUNCTION */
/* 0.0 <= THETA <= PI/2 */
DECLARE

```

```

N BYTE;
MAG BASED MAGA BYTE;
THETA BASED THA BYTE;
DIF (3) BYTE;
TEMP (3) BYTE;

```

```

ORD DATA (80H,00H,3DH,0C0H,00H,3EH,0A0H,00H,3FH,
0E0H,00H,3FH,90H,00H,40H,0B0H,00H,40H,0D0H,00H,40H,
0F0H,00FH,40H,88H,00H,41H,98H,00H,41H,0A8H,00H,41H,
0B8H,00H,41H,0C8H,00H,41H);

```

```

COS DATA (OFFH,80H,40H,0F8H,83H,40H,0F3H,9AH,40H,
0E7H,0E3H,40H,0D8H,8FH,40H,0C5H,0D9H,40H,0B0H,0C0H,40H,
97H,81H,40H,0F9H,2FH,3FH,0BFH,7AH,3FH,82H,0C8H,3FH,
88H,17H,3EH,87H,0EDH,3AH);

```

```

SIN DATA (OFFH,0D5H,3CH,0B8H,0E1H,3EH,9DH,69H,3FH,

```



```

008H,0ECH,3FH,98H,87H,40H,0A2H,76F,40H,0B9H,0DCH,40H,
0CEH,5BH,40H,0DFH,0A3H,40H,0EDH,6DH,40H,0F7H,82H,40H,
0FDH,0BBH,40H,0FFH,0FEH,40H);

```

```

IF THETA(2) > 3DH THEN

```

```

DO:
ZE = 8 - (THETA(2)-3DH);
N = 3 * SHR(THETA,ZE);
END:

```

```

ELSE N = 0;

```

```

CALL SUB (THA,ORD(N),DIF);
CALL MULT (.DIF,COS(N),.TEMP);
TEMP(2) = TEMP(2) - 1;
CALL ADD (TEMP,.SIN(N),TEMP);
CALL MULT (.TEMP,.DIF,.TEMP);
CALL SUB (.COS(N),.TEMP,MAGA);
END COS$SIN;

```

```

TRIG: PROCEDURE (XA,YA,THA);
/* FLOATING POINT TRIGNOMETRY ROUTINE */
DECLARE I BYTE, XA BYTE,

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```

Y BASED YA BYTE,
TH BASED THA BYTE,
TEMP(3) BYTE,
THETA(3) BYTE,
PITWO DATA (0C9H,10H,0C1H);
MPIHALF DATA (0C9H,10H,0C1H);

```

```

THETA = TH; THETA(1) = TH(1); THETA(2) = TH(2);

```

```

IF THETA = 0 THEN

```

```

DO:
X=80H; X(1)=00H; X(2)=41H;
Y=00H; Y(1)=00H; Y(2)=00H;
RETURN;
END:

```

```

DO WHILE THETA(2) > 80H;
CALL ADD (.THETA,.PITWO,.THETA);
END:

```

```

DO WHILE THETA(2) > 43H;
CALL SUB (.THETA,.PITWO,.THETA);
END:

```

```

DO CASE COMPARE (.THETA,.PI*2)
/* COMPARE = 0 THETA LESS THAN TWO PI */
/* COMPARE = 1 THETA EQUALS TWO PI */
DO:
X(1)=00H; X(2)=41H;
Y(1)=00H; Y(2)=00H;
RETURN;
END;
/* COMPARE = 2 THETA GREATER THAN TWO PI */
CALL SUB (.THETA,.PI*2,.THETA);
END; /* CASE */

I = 0;
DO WHILE THETA(2) < 80H;
TEMP = THETA;
I = I + 1;
CALL ADD (.THETA,.MPI*HALF,.THETA);
END; /* WHILE */

THETA(2) = THETA(2) AND 7FH;

DO CASE I-1:
/*
I = 1
DO:
CALL COS$SIN (.TEMP,XA);
CALL COS$SIN (.THETA,YA);
END;
/*
I = 2
DO:
CALL COS$SIN (.THETA,XA);
X(2) = X(2) OR 80H;
CALL COS$SIN (.TEMP,YA);
END;
/*
I = 3
DO:
CALL COS$SIN (.TEMP,XA);
X(2) = X(2) OR 80H;
CALL COS$SIN (.THETA,YA);
Y(2) = Y(2) OR 80H;
END;
/*
I = 4
DO:
CALL COS$SIN (.THETA,XA);
CALL COS$SIN (.TEMP,YA);
Y(2) = Y(2) OR 80H;
END;
/* CASE */
END;

```



```

RETURN;
END TRIG;

/***** END OF MATHEMATICAL FLOATING POINT PACKAGE *****/
/***** BALLISTICS PROGRAM *****/

/* DECLARATION STATEMENTS FOR THE SETDAT PROCEDURE */
DECLARE (G,R,A,D,A1,AA,VY,VYK,FRACT) (3) BYTE;
DECLARE (DS2,CFORM1,CFORM2,DM1,DM2,DKG1,DKG2,VMUZ,VE,SL,FN, DMAX) (3) BYTE;
DECLARE (ITYPE,IROTH,J,SET) BYTE;
DECLARE (U,DEL,TEMP1X,TEMP2X,TEMP3,TEMP4,TEMP5,TEMP6,TEMP7,V,THETA,VXA,VYA) (3) BYTE;

/* DECLARATION STATEMENTS FOR THE DECODE PROCEDURE */
DECLARE (IREF,DS) (3) BYTE;
DECLARE (DT1,DS1) (3) BYTE;
DECLARE (CC) (16) BYTE;
DECLARE (CT) (16) BYTE;

/* DECLARATION STATEMENTS FOR THE TRAJ PROCEDURE */
DECLARE (CF,DM,DKG,VX,VY,TH,V,VAE) (3) BYTE;
DECLARE (SM,ICH,MSG,TAB,E1) (3) BYTE;
DECLARE (TEMP1A,TEMP2A,TEMP3A,TEMP4A,TEMP5A,TEMP6A,TEMP7A) (3) BYTE;

/* DECLARATION STATEMENTS FOR THE RUNGE PROCEDURE */
DECLARE (AD,YO,VXO,VYO,RHO,AP1,AP2,AN1,AN2) (3) BYTE;
DECLARE (TEMP1B,TEMP2B,TEMP3B,TEMP4B,TEMP5B,TEMP6B) (3) BYTE;

/* DECLARATION STATEMENTS FOR THE DERIV PROCEDURE */
DECLARE (CH,MH,CKDG) (3) BYTE;
DECLARE (IREG,BASEADDRESS) BYTE;

SETDAT: PROCEDURE;
DECLARE CONSTANT1 (21) BYTE
INITIAL (080H,082H,046H,08EH,0F4H,03BH,083H,033H,040H,086H,0DBH,040H,
000H,000H,000H,000H,0A0H,000H,0C3H,080H,000H,040H);
DECLARE CONSTANT2 (6) BYTE
INITIAL (000H,000H,000H,000H,0A0H,000H);
DECLARE CONSTANT3 (2) BYTE
INITIAL (3,1);
DECLARE PI2 (3) BYTE
INITIAL (0C9H,00FH,043H);

/* SET THE CONSTANTS TO THEIR SELECTED VALUES */
DO J=0 TO 2 BY 1;
G(J)=CONSTANT1(J);
RAC(J)=CONSTANT1(J+3);
A1(J)=CONSTANT1(J+6);
AA(J)=CONSTANT1(J+9);
VT(J)=CONSTANT1(J+12);
VYK(J)=CONSTANT1(J+15);
FRACT(J)=CONSTANT1(J+18); END;

/* SET THE VARIABLES AS ASSIGNED IN THE DECODE PROCEDURE */

```



```

DECLARE WMFN (6) BYTE
INITIAL (0CEH,040H,04CH,0DAH,040H,048H);
/* DECLARE THE CC MATRIX OF DRAG COEFFICIENTS */
DECLARE CCVALUE (61) BYTE
INITIAL (0CEH,02AH,037H,000H,000H,000H,000H,000H,08FH,0A0H,03CH,
0E0H,080H,0BDH,08BH,04AH,03DH,0EEH,058H,08DH,0DEH,03EH,
0C8H,007H,0BDH,0E2H,03EH,042H,0D6H,042H,0C2H,0B7H,0D9H,042H,
0B4H,02FH,044H,0D8H,0C5H,0ADH,0D8H,045H,0BEH,055H,0C5H,
0B1H,00BH,046H,0E7H,0ECH,0C4H,0D5H,03AH,03DH,0E8H,0E0H,0BEH,
0ABH,0AAH,03EH,0C6H,0B1H,0BEH,0CDH,0BEH,03FH,0A8H,090H,0BEH,
096H,02BH,03DH,0A6H,085H,08BH,0A0H,05AH,038H);
/* DECLARE THE MACH CUT MATRIX CT */
DECLARE CTVALUE (18) BYTE
INITIAL (0D5H,0B1H,040H,0FAH,040H,09FH,03BH,040H,0E2H,08FH,040H,
084H,018H,041H,0A6H,066H,041H);
/* DECLARE THE WPNCODE MATRIX CONTAINING THE VARIABLE FOR EACH WPN */
DECLARE WPNCODE (585) BYTE
/* WEAPON CONSTANTS FOR THE MK 43 UNRETARDED */
INITIAL (4,000H,000H,000H,0A7H,027H,03BH,0A0H,000H,043H,0C0H,000H,042H,
4,000H,000H,000H,0CEH,06BH,039H,0A0H,000H,043H,0C0H,000H,042H,
/* WEAPON CONSTANTS FOR THE MK 61 UNRETARDED */
4,000H,000H,000H,083H,066H,039H,0A0H,000H,043H,0C0H,000H,042H,
/* WEAPON CONSTANTS FOR THE MK 116 WEYE */
2,080H,090H,039H,0B4H,07CH,038H,0C0H,000H,042H,080H,000H,042H,
/* WEAPON CONSTANTS FOR THE MK 76 WITH LUG */
2,080H,00CH,039H,0D0H,090H,039H,0C0H,000H,042H,0C0H,000H,042H,
/* WEAPON CONSTANTS FOR THE MK 77 FIREBOMB */
4,000H,000H,000H,0AEH,036H,03BH,080H,000H,042H,080H,000H,041H,
/* WEAPON CONSTANTS FOR THE MK 81 */
1,0A4H,0B1H,042H,000H,000H,000H,0A0H,000H,043H,0C0H,000H,042H,
/* WEAPON CONSTANTS FOR THE MK 81 SNAKEYE UNRETARDED */
4,000H,000H,000H,0A0H,005H,03AH,0C0H,000H,042H,080H,000H,042H,
/* WEAPON CONSTANTS FOR THE MK 82 MECH FUZE */
1,0A4H,01BH,042H,000H,000H,000H,0A0H,000H,043H,0C0H,000H,042H,
/* WEAPON CONSTANTS FOR THE MK 82 ELECT FUZE */
1,0BFH,021H,041H,000H,000H,000H,0A0H,000H,043H,0C0H,000H,042H,
/* WEAPON CONSTANTS FOR THE MK 83 MECH FUZE */
1,0ABH,0EAH,041H,000H,000H,000H,0A0H,000H,043H,0C0H,000H,042H,
/* WEAPON CONSTANTS FOR THE MK 83 ELECT FUZE */
1,09AH,0E1H,041H,000H,000H,000H,0A0H,000H,043H,0C0H,000H,042H,
/* WEAPON CONSTANTS FOR THE MK 84 */
1,080H,000H,041H,000H,000H,000H,0A0H,000H,043H,0C0H,000H,042H,
/* WEAPON CONSTANTS FOR THE MK 117 AL */
1,0C7H,0AEH,042H,0A0H,04DH,0B7H,0A0H,000H,043H,0C0H,000H,042H,
/* WEAPON CONSTANTS FOR THE MK 86 WET SAND FILLED */
1,0DEFH,0D2H,042H,000H,000H,000H,0C0H,000H,042H,080H,000H,042H,
/* WEAPON CONSTANTS FOR THE MK 88 WET SAND FILLED */

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1,0C0H,070H,041H,000H,000H,000H,0A0H,000H,043H,0C0H,000H,042H,
/* WEAPON CONSTANTS FOR THE MK 82 SNAKEYE UNRETADED */
4,000H,000H,000H,0F0H,039H,0C0H,000H,042H,080H,000H,041H,
/* WEAPON CONSTANTS FOR THE MK 82 SNAKEYE RETARDED */
1,000H,000H,000H,0F0H,028H,000H,000H,000H,080H,000H,042H,
1,2,000H,000H,000H,08AH,067H,038H,0C2H,08FH,03FH,0AFH,0C7H,03EH,
0A9H,065H,040H,08DH,08H,0B5H,
/* WEAPON CONSTANTS FOR THE SDAEYE TI=4.0 */
1,084H,0D3H,042H,000H,000H,000H,0C0H,000H,0C0H,000H,041H,
1,2,000H,000H,000H,0E3H,005H,03EH,000H,000H,000H,000H,000H,
08H,08H,043H,000H,000H,000H,
/* WEAPON CONSTANTS FOR THE ROCKEYE II TI=4.0 */
1,093H,006H,042H,085H,0F0H,03AH,000H,000H,080H,000H,042H,
1,2,0A3H,0D7H,03FH,086H,073H,03AH,0D1H,0E8H,03FH,0ACH,0E7H,03EH,
081H,0F8H,043H,000H,000H,000H,
/* WEAPON CONSTANTS FOR THE CBU TI=4.0 */
1,08FH,062H,042H,000H,000H,000H,0C0H,000H,0CFH,05CH,041H,
1,2,000H,000H,000H,0F1H,041H,03DH,000H,000H,000H,000H,000H,
080H,000H,043H,000H,000H,000H,
/* WEAPON CONSTANTS FOR THE MK 81 SNAKEYE RETARDED */
1,000H,000H,000H,0ACH,005H,03AH,000H,000H,0CFH,09DH,041H,
1,2,000H,000H,000H,08CH,0EDH,038H,0C2H,08FH,03FH,0EEH,075H,03EH,
0ADH,0D2H,040H,09EH,0DBH,0B5H,
/* WEAPON CONSTANTS FOR THE 20 MM GUN */
3,08FH,0C5H,042H,0F5H,0A1H,0BAH,0C0H,000H,041H,080H,000H,040H,
3,1,000H,000H,000H,000H,000H,000H,000H,000H,000H,000H,000H,
000H,000H,000H,000H,000H,000H,
/* WEAPON CONSTANTS FOR THE 5 INCH ROCKETS */
3,0D1H,0EBH,040H,000H,000H,000H,000H,000H,080H,000H,041H,
2,1,000H,000H,000H,080H,000H,041H,000H,000H,000H,000H,000H,
0B6H,014H,041H,000H,000H,000H,
/* WEAPON CONSTANTS FOR THE MK 43 RETARDED 0.4 SEC DELAY */
4,000H,000H,000H,000H,000H,000H,000H,000H,09EH,088H,03FH,
0,1,000H,000H,000H,000H,000H,000H,000H,000H,08DH,070H,041H,
0FAH,0E1H,040H,000H,000H,000H,
/* WEAPON CONSTANTS FOR THE MK 57 RETARDED 0.8 SEC DELAY */
4,000H,000H,000H,000H,000H,000H,000H,000H,0E1H,047H,03EH,
0,1,000H,000H,000H,000H,000H,000H,000H,000H,000H,000H,042H,
0E3H,0D7H,040H,000H,000H,000H,
/* WEAPON CONSTANTS FOR THE MK 61 RETARDED 0.6 SEC DELAY */
4,000H,000H,000H,000H,000H,000H,000H,000H,0CCH,0CCH,03DH,
0,1,000H,000H,000H,000H,000H,000H,000H,000H,0ACH,0CCH,042H,
0E3H,0D7H,040H,000H,000H,000H,
/* WEAPON CONSTANTS FOR THE MK 106 MOD 2 */
2,09BH,08H,03EH,000H,000H,000H,0CCH,0CCH,0CCH,040H,
2,1,000H,000H,000H,09BH,08H,03EH,000H,000H,000H,000H,
080H,000H,040H,000H,000H,000H,
/* ASSIGN THE REFERENCE VALUE FROM THE WPNCODE */

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/* IREF= WPNCODE(IDVEC(IDNO-1));
   ASSIGN THE VARIABLES THEIR RESPECTIVE VALUES FROM THE WPNCODE */
DO J=0 TO 2 BY 1;
  CFORM1(J)= WPNCODE(IDVEC(IDNO-1)+1+J);
  DKG1(J)= WPNCODE(IDVEC(IDNO-1)+4+J);
  DMAX(J)= WPNCODE(IDVEC(IDNO-1)+7+J);
  DT1(J)= WPNCODE(IDVEC(IDNO-1)+10+J);
END;

/* DECIDE IF SINGLE DRAG WEAPON AND THEN BRANCH ACCORDINGLY */
IF (IDNO < 17) THEN GO TO START; ELSE DO;
/* ASSIGN THE SECOND PORTION OF THE VARIABLES FOR DUAL STAGE WPNS */
IETH= WPNCODE(IDVEC(IDNO-1)+13);
IDOTH= WPNCODE(IDVEC(IDNO-1)+14);
DO J=0 TO 2 BY 1;
  DPG1(J)= WPNCODE(IDVEC(IDNO-1)+15+J);
  CFORM2(J)= WPNCODE(IDVEC(IDNO-1)+18+J);
  DP2(J)= WPNCODE(IDVEC(IDNO-1)+21+J);
  DKG2(J)= WPNCODE(IDVEC(IDNO-1)+24+J);
  DS(J)= WPNCODE(IDVEC(IDNO-1)+27+J);
  SL(J)= WPNCODE(IDVEC(IDNO-1)+30+J);
END; END;

/* IF IDNO=23 } ASSIGN THE MUZZLE VELOCITY TO VMUZ */
IF (IDNO = 23) THEN DO J=0 TO 2 BY 1; VMUZ(J)= VMFN(J); END;
/* IF THE IDNO=24 } THEN DO J=0 TO 2 BY 1; VMUZ(J)= VMFN(J); END;
/* IF IDNO = 24 } THEN DO J=0 TO 2 BY 1; FN(J)= VMFN(J+3); END;
/* BRANCH TO THE APPROPRIATE SECTION OF THE CC MATRIX */
START: IF (IREF = 1) THEN GO TO ONE;
        IF (IREF = 2) THEN GO TO TWO;
        IF (IREF = 3) THEN GO TO THREE;
        IF (IREF = 4) THEN GO TO FOUR;
ONE: DO J=0 TO 53 BY 1; CC(J)= CCVALUE(J); END;
     GO TO FOUR;
TWO: DO J=0 TO 26 BY 1; CC(J)= CCVALUE(J+27); END;
     DO J=0 TO 5 BY 1; CT(J)= CTVALUE(J+6); END;
     GO TO FOUR;
THREE: DO J=0 TO 26 BY 1; CC(J)= CCVALUE(J+54); END;
        DO J=0 TO 5 BY 1; CT(J)= CTVALUE(J+12); END;
        GO TO FOUR;
FOUR: RETURN;
END DECCDE;

DERIV: PROCEDURE;
DECLARE (TEMPIC, S6 (6) BYTE;
DECLARE CONSTANT S6 (6) BYTE;
INITIAL (OEAH, OBBH, O36H, OE0H, O06H, O24H);
DECLARE (EIGHT, NINE, TEN) LABEL;
/* COMPUTE THE VELOCITY OF THE WEAPON V= Sqrt(VX*VX+VY*VY) */
CALL MULT(.VX,.VX,.TEMP2C);
CALL MULT(.VY,.VY,.TEMP2C);

```

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CALL ADD(.TEMP1C,.TEMP2C,.TEMP3C);
CALL SORT(.TEMP3C,.V);
/* COMPUTE THE MACH OF THE WEAPON CM= V*(8.955E-04+3.26E-09*Y)+DM */
DO J=0 TO 2 BY 1;
  TEMP1C(J)=CONSTANTS6(J);
  TEMP2C(J)=CONSTANTS6(J+3);
END;
CALL MULT(.Y,.TEMP2C,.TEMP3C);
CALL ADD(.TEMP3C,.TEMP1C,.TEMP4C);
CALL MULT(.V,.TEMP4C,.TEMP5C);
CALL ADD(.TEMP5C,.DM,.CM);
/* DETERMINE THE REGION OF THE DRAG CURVE WHICH IS APPLICABLE */
IF (2 = COMPARE(.CM,.CT(MSTG))) THEN GO TO EIGHT;
IREG=0; GO TO TEN;
EIGHT: IF (2 = COMPARE(.CM,.CT(MSTG+3))) THEN GO TO NINE;
IREG=9; GO TO TEN;
NINE: IREG=18;
/* DO THE INTERMEDIATE BALLISTIC CALCULATIONS */
/* CKDG=CKG+CF*(CC(IREG,1,MSTG)+(CC(IREG,2,MSTG)+CC(IREG,3,MSTG)*CM)*CM) */
TEN: BASEADDRESS=TABLE1+IREG;
CALL MULT(.CM,CC(BASEADDRESS+3),.TEMP2C);
CALL ADD(.TEMP1C,.TEMP2C,.TEMP3C);
CALL MULT(.CM,.TEMP3C,.TEMP4C);
CALL ADD(.TEMP3C,.TEMP4C,.TEMP5C);
CALL MULT(.CF,.TEMP5C,.CKG;.CKDG);
CALL ADT(.TEMP5C,.CKG;.CKDG);
/* HH=TH/V-RHO*CKDG*V */
CALL MULT(.V,.CKDG,.TEMP1C);
CALL MULT(.TEMP1C,.RHO,.TEMP2C);
CALL DIV(.TH,.V,.TEMP3C);
CALL SUB(.TEMP3C,.TEMP2C,.HH);
/* AN2=HH*VX */
CALL MULT(.HH,.VX,.AN2);
/* AP2=HH*VY-G */
CALL MULT(.HH,.VY,.TEMP4C);
CALL SUB(.TEMP4C,.G,.AP2);
RETURN; PROCEDURE;
DECLARE CC CONSTANT $5 (9) BYTE
INITIAL(09BH,0B2H,093H,0A6H,029H,0BDH,00BH,018H);
/* CALCULATE THE AD VALUE AD= A*D */
CALL MULT(.A1,.D,.AD);
/* ASSIGN THE VARIABLES THEIR INITIAL VALUES */
DO J=0 TO 2 BY 1;
  VC(J)=Y(J);
  VX(J)=VX(J);
  VY(J)=VY(J);
END;

```



```

/* CALCULATE THE AIR DENSITY      RHO=2.37E-03-Y*(6.87E-08-Y*6.71E-13) */
DO J=0 TO 2 BY 1;
  TEMP1B(J)=CONSTANT55(J);
  TEMP2B(J)=CONSTANT55(J+3);
  TEMP3B(J)=CONSTANT55(J+6);
END;
CALL MULT(Y, TEMP3B, TEMP4B);
CALL SUB(T, TEMP2B, TEMP4B, TEMP5B);
CALL MULT(Y, TEMP5B, TEMP6B);
CALL SUB(T, TEMP1B, TEMP6B, RHO);
/* MAKE THE FIRST CALL TO THE DERIV PROCEDURE */
CALL DERIV; THE POSITIONS AND THE VELOCITIES */
/* Y= Y0+AD*VY */
CALL MULT(.AD, VY, TEMP1B);
CALL ADD(.TEMP1B, Y0, Y);
DO J=0 TO 2 BY 1;
  API(J)=AP2(J);
  AN1(J)=AN2(J);
END;
/* VX= VX0+AC*AN1 */
CALL MULT(.AN1, AD, TEMP1B);
CALL ADD(.VX0, TEMP1B, VX);
/* VY= VY0+AD*API */
CALL MULT(.API, AD, TEMP2B);
CALL ADD(.VY0, TEMP2B, VY);
/* CALCULATE THE AIR DENSITY */
DO J=0 TO 2 BY 1;
  TEMP1B(J)=CONSTANT55(J);
  TEMP2B(J)=CONSTANT55(J+3);
  TEMP3B(J)=CONSTANT55(J+6);
END;
CALL MULT(Y, TEMP3B, TEMP4B);
CALL SUB(T, TEMP2B, TEMP4B, TEMP5B);
CALL MULT(Y, TEMP5B, TEMP6B);
CALL SUB(T, TEMP1B, TEMP6B, RHO);
/* MAKE THE SECOND CALL TO THE DERIV PROCEDURE */
CALL DERIV; THE TIME, POSITION AND VELOCITIES */
/* T= T+D */
CALL ADD(T, D, TM);
/* X= X0+D*(VX0+AA*(VX-VX0)) */
CALL SUB(VX, VX0, TEMP2B);
CALL MULT(AA, TEMP2B, TEMP3B);
CALL ADD(VX0, TEMP3B, TEMP4B);
CALL MULT(X, TEMP4B, D, X);
/* Y= Y0+D*(VY0+AA*(VY-VY0)) */

```

```

CALL SUB(.VY,.VYO,.TEMP2B);
CALL MULTI(.AA,.TEMP2B,.TEMP3B);
CALL ADD(.VYO,.TEMP3B,.TEMP4B);
CALL MULTI(.D,.TEMP4B,.Y);
CALL ADD(.YQ,.TEMP5B,.Y);
/* VX= VXO+D*(AN1+AA*(AN2-AN1)); */
CALL SUB(.AN2,.AN1,.TEMP2B);
CALL MULTI(.TEMP2B,.AA,.TEMP3B);
CALL ADD(.TEMP3B,.AN1,.TEMP4B);
CALL MULTI(.D,.TEMP4B,.TEMP5B);
/* VY= VYC+D*(AP1+AA*(AP2-AP1)); */
CALL SUB(.AP2,.AP1,.TEMP2B);
CALL MULTI(.TEMP2B,.AA,.TEMP3B);
CALL ADD(.TEMP3B,.AP1,.TEMP4B);
CALL MULTI(.D,.TEMP4B,.TEMP5B);
CALL ADD(.VYO,.TEMP5B,.VY);
RETURN;
END RUNGE;
PROCEDURE SIX(X, SEVEN) LABEL;
TRAJ: DECLARE CONSTANT S4(4) BYTE;
DECLARE CONSTANT S4(4) BYTE;
/* INITIALIZE THE VARIABLES FOR THE TRAJECTORY PROCEDURE */
HSTG=CONSTANTS4(3);
TABLE1=CONSTANTS4(3);
DO J=0 TO 2 BY 1;
  CF(J)=CFORML(J);
  DM(J)=DM1(J);
  DX(J)=DXA(J);
  VY(J)=VYA(J);
  TH(J)=FN(J);
  Y(J)=ALT(J);
  YA(J)=Y(J);
  X(J)=CONSTANTS4(J);
  TM(J)=CONSTANTS4(J);
END;
/* DETERMINE THE TYPE OF ORAG */
IF (ITYPE=3) THEN GO TO FIVE;
/* CALCULATE THE STEP SIZE D=DS*SL*U */
CALL MULTI(SL,U,.TEMP1A);
CALL ADD(.TEMP1A,.DS,.D);
GO TO SIX;
/* SET THE STEP SIZE TO THE MAX ALLOWED D= DMAX */
FIVE: DO J=0 TO 2 BY 1; D(J)=DMAX(J); END;
/* CALL THE RUNGE PROCEDURE FOR THE INTEGRATION */
SIX: CALL RUNGE;

```



```

/* CALCULATE THE DTV VALUE DTV= 1/G*(VY+SQRT(VY**2+2.*G*Y)) */
CALL MULT(.G,Y,TEMP2A);
TEMP3A=TEMP2A; TEMP3A(1)= TEMP2A(1); TEMP3A(2)= TEMP2A(2)+1;
CALL MULT(.VY,TEMP4A); TEMP5A;
CALL ADD(.TEMP4A,TEMP3A); TEMP6A;
CALL SORT(.TEMP6A,.VY,TEMP7A);
CALL ADD(.TEMP6A,.VY,TEMP7A);
DO J=0 TO 2 BY 1; D(J)=DTV;
IF (IDNC <= 17) THEN GO TO SEVEN;
/* SET THE SECOND STAGE DRAG PARAMETERS */
MSTG=6; TABLE1=27;
IF (ITYPE=2) THEN DO; MSTG=0; TABLE1= 0; END;
DO J=0 TO 2 BY 1;
DKG(J)= DKG2(J);
DM(J)= DM2(J);
CF(J)= CFORN2(J);
/* TEST THE DRAG PARAMETERS FOR THE FINAL INTEGRATION STEP */
SEVEN: IF (0<>COMPARE(.DTV,D)) THEN GO TO SIX;
/* SET THE STEP SIZE TO THE VACUUM VALUE */
DO J=0 TO 2 BY 1;
D(J)= DTV;
END;
/* SET THE DRAG PARAMETERS FOR THE FINAL INTEGRATION STEP */
MSTG= 6; TABLE1= 27;
IF (ITYPE=2) THEN DO; MSTG= 0; TABLE1=0; END;
DO J=0 TO 2 BY 1;
DKG(J)= DKG2(J);
DM(J)= DM2(J);
CF(J)= CFORN2(J);
END;
/* CALL RUNGE FOR THE FINAL INTEGRATION */
/* CALL RUNGE!
CALL CALCULATE THE DTV VALUE DTV= 1/G*(VY+SQRT(VY**2+2.*G*Y)) */
CALL MULT(.G,Y,TEMP2A);
TEMP3A= TEMP2A; TEMP3A(1)= TEMP2A(1); TEMP3A(2)= TEMP2A(2)+1;
CALL MULT(.VY,TEMP4A); TEMP5A;
CALL ADD(.TEMP4A,TEMP3A); TEMP6A;
CALL SORT(.TEMP6A,.VY,TEMP7A);
CALL ADD(.TEMP6A,.VY,TEMP7A);
CALL DTV(.TEMP7A,.G,DTV);
/* UP-DATE THE TIME OF FALL OF THE WEAPON TM= TM+DTV */
/* UP-DATE THE DOWN RANGE TRAVEL OF THE WEAPON X= X+DTV*VX */
CALL MULT(.DTV,.VX,.TEMP2A);

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```

CALL ADD(.X,.TEMP2A,.X);
RETURN;
END TRAJ;

/* PROGRAM STARTS HERE */
CALL BEGINNING;
DO FOREVER;
  CALL INPUT;
  CALL SETDATA;
  CALL DECODE;
  CALL TRAJ;
  CALL OUTPUT;
END; /* FOREVER */

EOF
/***** END OF BALLISTICS PROGRAM *****/

```


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